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## The Use of Honey in Ice Cream

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ICE CREAM is composed of a combination of cream, milk, condensed milk, sugar and flavoring material, with or without the addition of gelatin or eggs. Practically all states have laws regulating the composition of the ice cream as well as the manner in which it shall be processed and dispensed.

Ice cream owes its palatability, to a great extent, to its sugar content. The amount of sugar used varies from 12 to 18 per cent, depending somewhat upon the kind of ice cream and the section of the country in which it is manufactured. More sugar is ordinarily used in chocolate, caramel or butterscotch ice cream than in vanilla. Eastern manufacturers use from 2 to 3 per cent more sugar than do most of the manufacturers located in the central states.

According to a survey recently conducted by the National Association of Ice Cream Manufacturers, 77.5 per cent of the sugar used in the United States in ice cream is cane sugar, whereas 8.1 per cent is beet, 2.1 per cent is corn, 0.1 per cent is invert, and 12.2 per cent is contained in the condensed milk used in preparing the ice cream mix. Cane or beet sugar is ordinarily considered as the main source of sweetness. Corn sugar can be used to advantage when its price is sufficiently low. Being only about 70 per cent as sweet as cane or beet sugar (sucrose), corn or dextrose sugar is sometimes used to replace a part of these sugars, thereby introducing into the mix more solids than it would be possible to have in case the same sweetness was obtained entirely from the sucrose.

Invert syrup is a product that was used rather extensively during the war, when the government placed a limit upon the amount of cane or beet sugar that could be used in ice

cream. It is prepared by heating either cane or beet sugar, dissolved in water, to a high temperature in the presence of an acid. Prof. H. A. Ruehe, of the Dairy Department, proposed the following formula for making invert syrup:

100 pounds of sugar.  
44 pounds of water.  
50 grams of powdered tartaric acid.

These ingredients are mixed together and boiled for thirty to thirty-five minutes. As a result of this treatment the sugar is broken down to dextrose and levulose. The dextrose is only about 70 per cent as sweet as sugar, but levulose is 164 per cent as sweet, so when using the above formula the sweetening powers of the sugar are increased. Invert sugar syrup is not used extensively in ice cream at the present time, due to the relative cheapness of cane or beet sugar.

At the University of Illinois a study has been begun on the possibilities of using extracted honey as a source of sweetness and flavor in ice cream. Honey contains the two sugars, dextrose and levulose, and chemically is similar to the invert sugar syrup described above; while in the honey sac of the bees, sucrose, which forms the chief constituent of nectar, becomes for the most part inverted, forming dextrose and levulose. In addition, honey contains enzymes such as invertase or sucrase, diastase, and sometimes inulase and catalase. Certain aromatic compounds are present which give to the honey its characteristic flavor and odor. Other substances such as wax and certain foreign matter may be present in variable amounts.

A series of experiments has been performed in which we have studied the merits of honey from the stand-

point of its effect upon the freezing process, the flavor and body of the ice cream and its keeping quality while held at low temperatures for a period of time. We have also compared thirteen different flavored honeys from the standpoint of the desirability of the flavor in ice cream. A general summary of our study to date may be of interest.

Total solids determinations on three lots of honey were 82.34, 76.65 and 78.9 per cent, respectively; whereas the sweetness was found to be about 7 per cent of that of sugar. Being a mixture of dextrose and levulose, honey has a greater depression on the freezing point of the ice cream than does sugar when the two are compared on a total solids basis. Mixes containing honey do not freeze quite so rapidly as do the sugar mixes.

Honey not having as great a sweetening power as sugar, must be used in greater proportion. It was necessary to use about 18 per cent of the honey to give a sweetness comparable to that of a mix containing 14 per cent cane sugar. When used in these proportions there was little difference in the body of the ice cream.

The flavor of the ice creams varied. It was found that when as much as 20 per cent of honey was added, the ice cream usually acquired a waxy flavor; whereas that containing 16 to 18 per cent was desirable. Combining sugar and honey did not produce as nearly as satisfactory a flavor as did using either the sugar or the honey alone. In one series the ice creams which contained both sugar and honey developed a very undesirable stale flavor in storage; whereas none of the ice creams containing sugar or a limited amount of honey alone developed the stale flavor. This flavor was thought to be due possibly to the presence of beeswax. In another series similar combinations of

\* F. P. Sanmann, of the Dairy Department, assisted in this investigation.

sugar and honey did not produce the stale flavor. The honey used in this series contained only small amounts of the wax. It was also true that the flavor of the all-honey ice cream of this series was much better than the all-honey ice cream of the first series.

Some city ordinances require that the entire ice cream mix be pasteurized by heating to a temperature of 145° F. or higher and holding at that temperature for thirty minutes. We did not find such treatment to have any detrimental effect upon the honey flavor, although it did tend to produce a slightly more pronounced flavor in the ice cream. Heating the mix tends to cause the wax to melt and come to the top, and as the temperature increases this wax, instead of being dispersed throughout the mix, grows into larger globules.

Various flavor combinations were tried with the all-honey ice creams. Vanilla extract does not blend well with the honey flavor. Chocolate tends to cover up the honey flavor. Pineapple was found to blend very well with the honey. Cherry, peach, tutti-frutti and mint were also found quite satisfactory. The strawberry fruit flavor does not blend so well as do some of the others. One of the best combinations we found was a bisque made with grapenuts.

Comparison of the ice creams flavored with different honeys gave some very interesting results. The following table shows the placings of five judges on thirteen different lots of ice cream, each containing a different honey. Eighteen per cent of honey was added in each case:

The clover and Dadant No. 2 ice creams seemed to be the most popular with the judges. The cotton sample was placed last in each case, it having a fermented flavor. Buckwheat gave the ice cream a coffee color and a peculiar flavor, somewhat similar to maple or sorghum. The basswood honey had a mint flavor which was very noticeable in the ice cream. The flavor on the palmetto and the heartsease lots were both

rather pungent and undesirable. Tupelo and sage were about on a par and were considered by most judges as neither the best nor the poorest of the samples.

The sweetness of these ice creams did not vary a great deal and was comparable to the control samples, which contained 14 per cent sugar.

#### Conclusions

From the data obtained so far the following conclusions may be drawn in regard to the use of honey in ice cream:

1. Honey can be satisfactorily used to replace the sugar in ice cream for the purpose of creating a new variety.

2. When replacing sugar with honey, about 25 per cent more of the honey should be used than sugar. From 16 to 18 per cent of honey is recommended.

3. Honey should not be used in combination with sugar, as a better flavored ice cream is obtained when the honey is used alone.

4. Honey can be used in combination with most flavors ordinarily used in ice cream, excepting vanilla. Honey serves a dual purpose inasmuch as it flavors as well as sweetens the ice cream.

5. Different flavored honeys can be used to advantage. Of the ones studied, alfalfa, clover and basswood honeys seem the most popular with the judges.

6. There exists a difference in the quality of the ice cream made from different honeys, due to conditions other than differences in variety of honey. Of considerable importance in this respect is the presence of wax and a fermented condition of the honey. (When honey has been extracted by centrifugal force, it should not contain any wax at all.—Editor.)

#### Possibilities of the Use of Honey in Ice Cream

Approximately one and a half billion pounds of ice cream are consumed in the United States in one year's time. This represents a sugar consumption of about two hundred

million pounds. According to a survey made by the National Association of Ice Cream Manufacturers, 55.48 per cent of the ice cream sold is vanilla, 10.06 per cent is chocolate, and 7.82 per cent is strawberry, leaving 26.64 per cent for the various other flavors, such as cherry, maple, peach, pineapple, etc. Coffee ice cream represents 2.26 per cent of the total manufactured. If the consuming public can be prevailed upon to take over 2 per cent of their ice cream flavored with coffee, surely they can be persuaded to buy at least as much honey ice cream. Supposing such an amount of honey ice cream was to be sold each year. This would represent a consumption of about 5.5 million pounds of extracted honey.

From a cost standpoint, honey compares very well with sugar. Assuming fourteen pounds of sugar as the amount needed to sweeten one hundred pounds of mix, the cost would be 84 cents. The amount of good vanilla extract required to flavor this amount of mix would cost about 50 cents, making a total cost of \$1.34. To sweeten and flavor the same amount of this mix would require eighteen pounds of honey costing \$1.44, assuming a price of 8 cents per pound for the honey. The difference would amount to about one-half cent per gallon of ice cream. As compared with fruit ice creams the honey ice cream would be much cheaper. Fruits vary in price, but will average about \$2.00 per hundred pounds of mix, making a total cost for sugar and fruit about \$2.84, as compared with \$1.44 for the honey.

By using a variety of the different flavored honeys, several different flavored ice creams could be marketed. In this way a wider appeal could be made so that the consumer could buy ice cream sweetened and flavored with his favorite honey.

Too much emphasis cannot be placed upon the fact that if honey is to be successfully used in ice cream it must be of uniformly high quality. It should not vary in composition or flavor; should be free from wax and foreign matter, and should not be fermented. If honey producers are in a position to supply ice cream manufacturers with a high quality product at all times, then it seems that an opportunity awaits them in the dairy field.

#### Acknowledgments

Acknowledgment is due Mr. M. G. Dadant for suggesting this problem and for supplying of the bulk of the honey used. Credit should also be given to Prof. V. G. Milum, of the Entomology Department, for his kind cooperation, and to Hoffman & Hauck, Inc., Ozone Park, New York, for the samples of honey they submitted for this study.

#### Comparison of Different Honeys in Ice Cream

Sample	* Rating	Judge No. 1	Judge No. 2	Judge No. 3	Judge No. 4	Judge No. 5
Dadant No. 1	41	6th	6th	6th	6th	5th
Dadant No. 2	63	1st	2nd	1st	1st	1st
Orange	40	5th	5th	8th	7th	
Tupelo	29	7th	8th	9th	9th	8th
Heartsease	20	9th	10th	12th	10th	9th
Buckwheat	14	12th	12th	10th	11th	11th
Alfalfa	58	4th	1st	3rd	2nd	2nd
Sage	29	8th	9th	7th	7th	10th
Cotton	5	13th	13th	13th	13th	13th
Basswood	52	3rd	4th	4th	3rd	4th
Univ. of Illinois	38	4th	7th	11th	4th	6th
Palmetto	19	3rd	11th	13th	12th	12th
Clover	56	2nd	3rd	1st	5th	3rd

\* Maximum rating possible, 65. Minimum rating possible, 5.

## Bees, Banks, and Men—A Play on Ideas

By Leonard S. Harker

After studying the honeybees (*Apis Mellifica*) for twenty years, Maeterlinck attributed to them the highest power of intellect after that of man himself. Collectivism has probably reached its zenith in the bee colony, and no other bird or beast has received so much attention as the honeybee from writers generally. Some of the greatest thinkers of the world have turned to the hive for their aphorisms, while poets and philosophers have sung the song of the laboring bee in every age and every clime.

It is believed that the bee was first nurtured in the superabundance of the tropics. It must have been a very long process under adverse circumstances which compelled the solitary bee to join forces with her kind for mutual well-being. The factors which brought this about were probably the need for colonization, engendered by a cooling earth and the several ice ages. In place of the gay free life in tropical splendor, she had to take to the protection of gloomy caverns and hollow trees.

To the man of science, the bee is just a little automaton acting in response to stimuli—a wee alarm clock, endowed with a certain amount of energy, whose total span of life amounts to about fifty-six days during the active season. The busy hive, looked at from one angle, is like a model factory in miniature, turning out pots of honey at a furious pace. The ceaseless labor nearly paralyzes us with wonder, for these fierce virgins adhere to no eight-hours day, but work day and night—the harder they work the sooner their carcasses are dumped out of the hive. The mother bee (one time thought to be a king and then a queen) is just a super egg-laying machine, turning out her eggs to the tune of 2,000 to 4,000 per day during the height of the season, to replace the dead.

When the honeyflow ceases, the climax is reached in their system of economics, and the drones are ruthlessly slaughtered in the very midst of plenty, for even these clever insects do not know how to print tickets or dollar bills equivalent to their production. Dean Inge was at least right for once when he said:

"The mere male must hope that we shall not come to anchor like the bees, in an unchangeable suffragette millennium, under which all the work will be done by our maiden aunts."

If the word "machinery" is but another name for "our maiden aunts," I am sure the "mere male"

will be very much obliged to them and the gloomy dean, provided, of course, the machine is properly worked under a "Henry Ford" captain.

There has been much speculation as to when and where is the "spirit of the hive." In the hive a condition of orderly anarchy appears to exist, in which each worker is a law unto herself—the state in miniature—for the good of the commonwealth.

Readers of The American Bee Journal will not be surprised to learn that there is a close connection between bees and banks. The bee typifies industry and economy as well as the arts of peace. Several English banks adopted the beehive as their crest. Among the Egyptians and other races the bee was held to be sacred, while the bee tree was taboo. A strong case can be made out for the bee tree being the Tree of Life, while the flaming sword represented the stings, to remind unwanted per-

sons who stirred up the bees' nest. The forbidden fruit which Eve gathered from the Tree of Knowledge of Good and Evil was not fruit at all, but a honeycomb. Even today serpents are known to frequent trees in which bees have nested. The first serious enterprise of Neolithic man was bee hunting for honey.

Honey is the finest natural sweet in the world, and the most perfect carbohydrate available for general consumption; it is also reputed by some to contain vitamins.

It has been calculated that some 100,000 varieties of plants would disappear if the bees did not visit them. The bee, in gathering nectar, the love token of the flowers, cross-fertilizes them, thereby producing bigger and better crops; and so in the hive of men we need the vitalizing touch of bank credit to turn our apparent insufficiency into great abundance for the salvation of mankind.

## INTERESTING PERSONALITIES

Ralph L. Parker



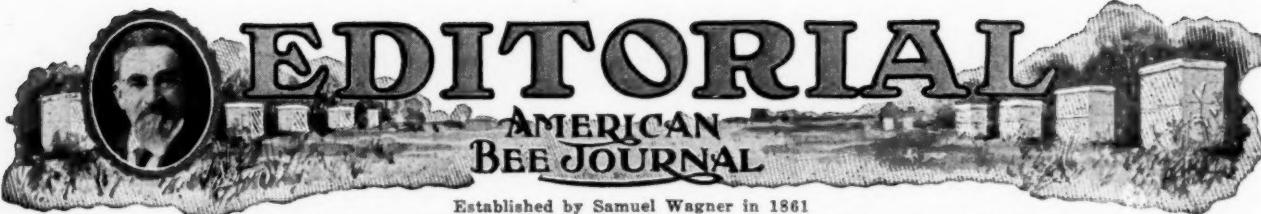
R. L. Parker is a teacher and scientist and a beekeeper all rolled up in one package. As associate professor of entomology of the Kansas College of Agriculture and State Apiarist of Kansas he has a man's size job laid out for him. He is the official representative of the bee-keeping industry in the Sunflower State and likewise he is a teacher of entomology in the college.

Parker keeps up with the progress of practical honey production by the management of bees of his own. The

supervision of the apiary inspection and his college teaching provide sufficient activity to keep him rather busy.

Parker has done some work on the importance of pollen as food for young bees and has proved that many of the substitutes for natural pollen are indigestible by the larvae.

He is a well known figure at bee meetings in Kansas and nearby states and is held in high esteem by the bee men of that region.



Established by Samuel Wagner in 1861

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### Do We Need More Beekeepers?

We anticipated more discussion of the article by Prof. C. L. Corkins in the January issue of this magazine. At first thought it may seem that his position, that increased production will result in reduced prices for honey, is sound. However, there is one element in the situation which he overlooks. Under present conditions the pressure of economic competition is so great in every line that the only way for a product to hold its place is to continue to expand its output and its market. If we assume that, by limiting the amount of honey produced to that required by the immediate demand, our markets will be assured, we are greatly mistaken. Other sweets are contending for our present markets, and unless we maintain our selling efforts we will lose the ground that we already have.

Market demands are inclined to ebb and flow and there is no way to limit production to just the right amount. If we fall a bit short of the demand, something else will replace our product. If we have a little left over, it will result in increased effort to find an outlet. A surplus may result in a temporary depression of prices, but the pressure to find new outlets will result in greater prosperity when they are found.

An example of this kind is the case with raisins. The raisin growers have had as many ups and downs as any other agricultural industry. When production had overtaken the market demands and they were confronted with the necessity of finding new outlets, the use of raisins in bread was suggested. It took some effort to sell the idea to the bakers and to the housewives, but the result was an outlet for hundreds of tons of raisins which took the surplus for a long time. When production again overtook consumption they offered the five-cent package of the fruit at candy stores and news stands. This again offered additional outlet for large quantities of the surplus. Had the raisin growers attempted to restrict production to the original market demands, the competition of other products would have gradually invaded their markets, with the necessity of additional restrictions. The ultimate result of such measures would crowd them out of the picture. The process of expansion and finding new outlets for their products has made the raisin growers known to the world at large as successful producers of a desirable fruit and on the whole has increased the prosperity of the individual grower.

Honey production cannot stand still. Either the business must expand and go forward, or soon it will be replaced with something else which can stand the pressure of present day economic conditions. F. C. P.

### Economy in Beekeeping

Charles Dadant often said that success in beekeeping depends mainly upon how carefully we save the combs, because the cost of combs to the colony is enormous. When the writer of this article was fifteen years old, his father sent him, every spring, among the box-hive beekeepers of the vicinity, to buy the combs of the dead colonies. There were always a number of colonies, espe-

cially late swarms, which died in the apiary of the old-fashioned beekeeper. This man did not know the value of combs and usually allowed the moths to eat up what the hive contained, after the bees had died. But Charles Dadant would always place every bit of comb secured, carefully fastened within brood frames. These would be given to bees and in a short time, when the season opened, these combs were fastened by the bees within the frames in such a way that it was difficult to detect that they had not been built there.

Wax costs from seven to twenty pounds of honey for every pound of comb built, according to the conditions. The cost price is often closer to twenty pounds than to seven pounds. Colonies purchased in the shape of pound packages, without any comb, are soon built up when they are supplied with good worker comb. Comb foundation is very good, but it will never equal the value of the entire comb already built. The important thing is to supply them with **worker** comb. Similarly, it is highly profitable to remove drone combs and replace them with worker combs. We always have enough drone combs, more than we need. Besides, if we wish good drones, it is better to raise them in colonies selected for the purpose.

Save your good combs and produce honey economically.

### Signs of the Times

The fact that large financial interests are engaging in the packing and distribution of honey is very encouraging. It was such organizations that made the present stability in several similar agricultural enterprises possible. Before the days of the packing plants, the market for eggs was very uncertain and prices varied greatly. Now, in every large producing center, there is a market which will take one dozen eggs or a hundred cases at about the same price per dozen. There is no longer the necessity of devoting as much time to selling the product as in producing it.

Everything points toward a similar stability in the honey market within a few years. When such conditions come to pass the honey producer will no longer need to be a good salesman in order to realize a fair return from his crop. With a stable market the price cutter will disappear, for there will be no occasion to cut prices. The buyer will be ready to take the honey and pay cash for it at current market prices.

The one thing lacking to make honey production a stable business is such a market. With the market assured there will be expansion of production to keep pace with any demand which may appear. F. C. P.

### Australians Propose Marketing Board

According to the Australasian Beekeeper, a special marketing act will shortly be submitted to popular vote in New South Wales. In this act it is proposed to set up a marketing board which shall have absolute control of distribution and prices of all honey in the province. We quote:

"The board may either sell for itself, or arrange for the sale, may issue licenses to agents, wholesalers or individuals to continue their present business of selling. The board can regulate distribution and prices, and even take over the whole of the actual selling if efficient marketing demands that course."

To place an entire industry under control of a board and leave no voice in the distribution or price of his product in the hands of the producer seems to us here in America as a rather radical move. As we understand

the proposed act, it will be necessary for the producer who wishes to sell honey to his neighbors to secure an exemption from the board. Naturally such a proposal would only be considered as a possible remedy for an era of low prices and unprofitable production. To us it appears to be a dangerous expedient, for once the act is passed the efficient salesman is bound to accept the same reward as the inefficient one and can find no means of escape.

On the other hand, a voluntary cooperative society to handle the crop of the members looks like a good thing. It is one thing for producers to get together through joint interest and quite another to be compelled by the state to turn over the crop to a political marketing board.

F. C. P.

## Standard Needed for Packages

On another page of this magazine appears announcement of the Southern States Beekeeping Conference, which is to be held in conjunction with the Louisiana State Beekeepers' Association at Baton Rouge on February 8 and 9.

On the second day of the meeting, Mr. James I. Hambleton, of the Department of Agriculture, is to address the Conference on package bees and queen rearing.

It is to be hoped that representative breeders of the entire South, as well as representative breeders and purchasers in the North, may be in attendance at this meeting and that a discussion may develop whereby may be evolved a more definite plan for standardization of package bees and of queenbees, and nuclei as well.

The southern shipper and the northern purchaser have both been at a disadvantage in the past from the fact that there were no definite standards to follow in package shipping, and the result has been that one shipper might furnish a much lower grade package than another and still get the same price for it. The northern receiver, on his part, has not been able to determine exactly what sort of a package he would get for his money. The business undoubtedly will develop on a more stable basis and more rapidly if such standards can be agreed upon. Such standards should be evolved only after mature consideration and cooperation of all the southern officials and package shippers themselves.

## Can Honey Compete with Sugar?

Everybody agrees that honey is a far better sweet than sugar. But, to compete with sugar, honey must be retailed at a price that will render the competition possible.

Very fine packages of honey, in glass, of an almost round shape, are put upon the market. But such honey retails at something near 10 cents per ounce. It is very evident that, if we wish the consumer to use honey as he does sugar, it must be retailed at not to exceed 20 cents per pound. This may be done if we can get the consumer to buy honey as he does sugar, in bulk. Who ever heard of buying sugar in packages of a few ounces? Most housekeepers buy it in at least 25-pound sacks. When we can get them to buy honey in packages of ten to sixty pounds, we may expect to put honey on a commercial competition with sugar, for honey will sell readily at three times the price of sugar. This would leave a margin to the producer while making its price acceptable to most of our housekeepers. A change in the methods of retailing honey is one of the needs of the present day.

## Appropriation for Research With Honey

As we go to press we learn that through the efforts of the American Honey Producers' League and the American Honey Institute, represented at Washington by Dr. H. E. Barnard, an increase of twenty thousand dollars has been provided for the Bee Culture Laboratory in the bill reported by the Senate sub-committee on agricultural appropriations. This fund, we understand, is for the purpose of special research with honey, which is very much needed by the industry. The bill goes now to the conference committee for approval before final action is taken, which may occur before this reaches our readers.

## Windbreaks

Whether our colonies are in single or double-wall hives, or whether they are packed for winter or not, we must bear in mind that windbreaks are a great benefit to the apiary. When I was a young man, we once bought an apiary the colonies of which were scattered in every position, some on the south side of the home, some on the east, and some north of the barn and facing a wind-swept field. The winter was quite hard and the colonies facing north nearly all died, while the colonies that were located on the south side of the home and facing south lived through and began breeding early.

We have once told our readers about one of the most successful beekeepers of Canada, Mr. Tissot, of Ottawa. His bees are on the south side of his little honey house; but, in addition to the shelter given by this house, he erects a tight board fence every fall around his apiary. In that part of Canada the snow falls early and thickly. The fence causes it to gather in the yard and cover the hives over. The warmth of the bees melts it enough around the entrances to permit a sufficient ventilation, and when the snow melts down, the colonies are found in splendid condition.

In our own case, we like to have our bees protected from the strong north winds. There is less penetration of cold air within the walls of the hive and, when a fair day comes, the bees are much more prone to take advantage of it to have a cleansing flight and less likely to get lost than if the hives are exposed to the action of a strong breeze.

Where there is no available shelter at hand, a row of corn fodder standing against a cross pole will help the apiary a great deal, provided these cornstalks are not placed where they will prevent the rays of the sun from reaching the apiary.

## Gas Treatment for Foulbrood

In this issue is an article by Leroy F. Baxter, of Nebraska, giving his experience with the treatment of foulbrood with formalin gas. Mr. Baxter's experience indicates that such treatment is not as simple as it looks, and his caution to go slowly when dealing with something new seems good in this case.

It appears to us that his results in sterilization might have been better had the work been done at a higher temperature. The loss of the bees when put on the sterilized combs, however, offers another problem which must be watched with care by those trying this method of dealing with disease.

## Honey Producers' League

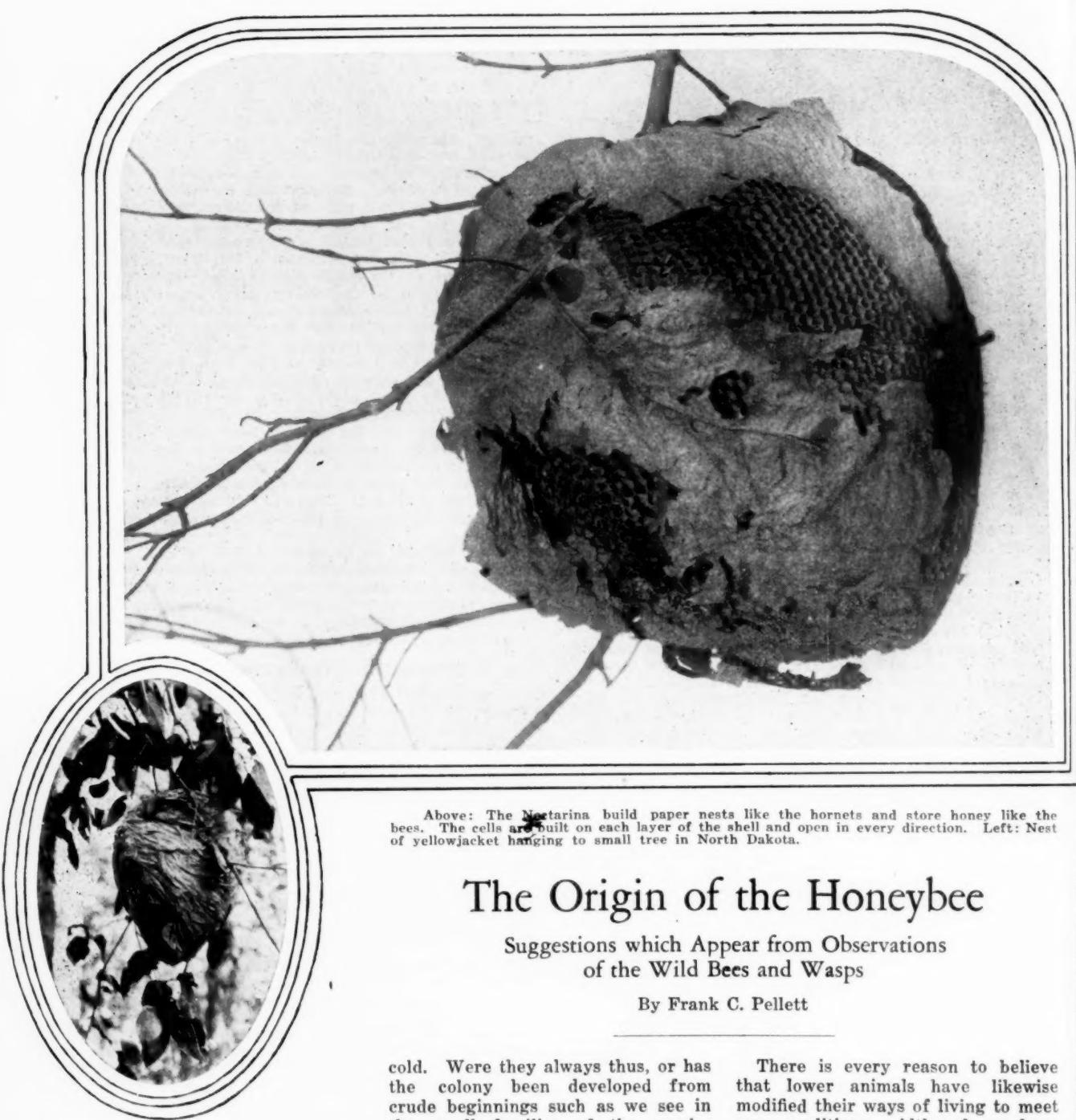
The meeting of the National Honey Producers' League will take place February 7, 8 and 9, at Sioux City, Iowa. Special railroad rates have been promised, provided at least 250 members attend. So it will be necessary that each member attending secure a certificate at the time of buying a ticket, in order to be able to take advantage of the reduction on the return trip. It is hoped that a large attendance will be there. Union is strength.

## A Compliment from Roumania

The Central Association of Beekeepers of Roumania has honored our editor-in-chief by electing him "honorary vice-president" of their association, and this announcement was sent to him, with the best wishes of the members of that association. Their headquarters are at Bucarest, where they publish a magazine, "La Roumanie Apicole." Our thanks are due to the Roumanian beekeepers.

## Dr. John Rennie

One of the leading Russian bee magazines, the "Opytnik Paceka," in its December number, publishes not only a short biography of Dr. John Rennie, who died lately, but also a very good picture of this noted student of bees and bee diseases. The Russians are taking pains to get to the front in scientific studies of beekeeping.



Above: The Nectarina build paper nests like the hornets and store honey like the bees. The cells are built on each layer of the shell and open in every direction. Left: Nest of yellowjacket hanging to small tree in North Dakota.

## The Origin of the Honeybee

Suggestions which Appear from Observations  
of the Wild Bees and Wasps

By Frank C. Pellett

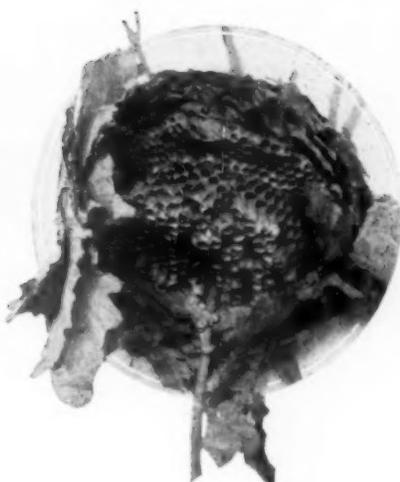
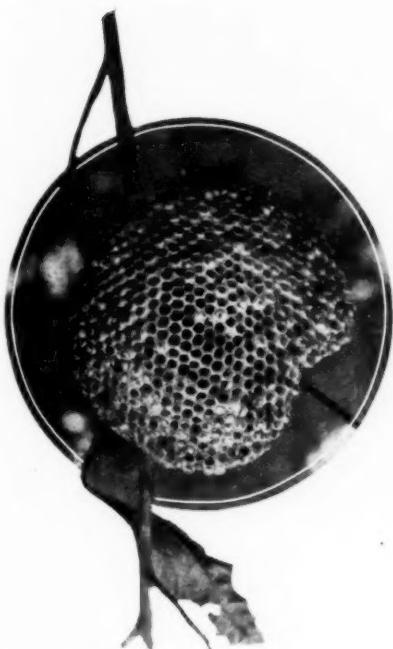
HERE has been much speculation concerning the origin of the various activities of the honeybee colony. When and how did they learn that by the combined labor of many individuals they could survive and prosper under conditions under which each alone would perish? By joining forces they build large combs and store an abundant supply of honey to carry them through a period of dearth. Together they defend their store from enemies, and by means of muscular activity in alternate periods of rest and labor they are able to warm the cluster and survive the

cold. Were they always thus, or has the colony been developed from crude beginnings such as we see in the small families of the species manifesting the first tendency toward social organization?

We know, of course, that man has changed his habits in comparatively short periods of time to conform to a new environment as he moved into new regions. Whereas he formerly lived in caves, in rude huts, and later in tents, he now builds for himself houses with all comforts and conveniences, where he feels little the effect of the changes of season. He once went on foot; later he subdued wild animals and rode horseback, and now he moves about on wheels in high-powered machines of his own making.

There is every reason to believe that lower animals have likewise modified their ways of living to meet new conditions. Although we have reason to believe that the honeybee is very old and that, long before there was any evidence of the appearance of man, it lived and labored and swarmed in much the same way that it does now, still we must believe that some time in the dim distant past it was developing the organization which we so much admire.

There is little chance that evidence of the actual transformation of habit will ever be found among the fossils which tell us so much of the life of ancient times. We can only speculate by comparison with the known habits of the bees and wasps of the



Above: Mason wasps build cells of mud, which they provision with caterpillars or spiders. Left: *Polistes* makes a single layer of cells without any cover. Right: Interior of the nest of the bald-faced hornet, showing horizontal combs in which the young are reared.

build cells of mud which they provision with caterpillars or spiders. They sting their prey to the point of paralysis so that they are unable to escape, yet they are not injured enough to cause their immediate death. When the cell is filled with such a supply of fresh meat, the egg is laid and the opening closed. The newly hatched young finds itself alone, as does the young of the solitary bee, with plenty of food and nothing to do but eat and grow.

The first symptom looking toward social organization is the disposition of some of these solitary insects to use a common tunnel, from which each female digs her own branches and provisions them independently.

A little higher in the scale we find both bees and wasps that live together in small families, as the

present which we have opportunity to observe. If we look to them for information we can at least learn how the more primitive of living species behave. This will furnish suggestions for interesting speculation concerning the past history of the honeybee.

Scientists regard the bees as wasps which have become vegetarian in their habits, "Flower Wasps," or "Blumenwespen," as the German entomologists call them; and since we find wasps which store honey as do the bees, while retaining other wasp characteristics, there is good evidence to support that view.

The solitary bees build nests in tunnels dug into the ground, in such crevices or cavities as they may find suited to their needs, or they construct earthen cells or use the hollow of a plant stem. The use of the hollow stem of some plant with abundant pith is very common. The mother opens the cavity to the desired length and then stores it with a ball of pollen moistened with honey. This is of a size sufficient to furnish food for the growing larva until it reaches its maturity. She then brings bits of leaf and closes the cavity to avoid enemies which may chance to come by. Above this wad she provides another ball of food, lays another egg, and over this she makes another partition, continuing in much the same way as our fathers loaded their muzzle-loading shotguns. Several such cavities are thus provisioned. When the egg hatches, the young bee finds no nurse and no sympathy. It must look out for itself until maturity.

Likewise the mason wasps, commonly spoken of as mud-daubers,



Bald-faced hornets build a paper nest a foot or more in diameter and thousands of individuals live together.

bumblebees and the polistes. In the book, "Our Backdoor Neighbors," I have told at some length the story of the polistes which was under observation for several months. The single paper comb never reached a size much greater than a dollar, and at the end of the season there were hardly two dozen individuals living together in the little community.

A single fertile female survived the winter. She took the weathered wood from an old fence post, mixed it with her saliva and made paper. Spreading it in the form of cells with the open end downward, she worked away quietly and patiently. When a cell was ready she deposited an egg and then worked away building other cells in which to lay more eggs. When the eggs began to hatch there was less time for building, since she had to hunt food for the young. She captured young caterpillars and ground up the flesh between her jaws. After kneading it to a pulp, she fed her hungry offspring. As the summer advanced, more young appeared and greater demands were made upon her for food. She would build awhile, then hunt awhile, and then she would rest quietly above her nest for a few minutes before going afield again.

When a single individual must perform all the duties of motherhood, nurse her young, provide food for the growing family and stand guard to protect them from enemies, it is impossible to build a very large nest or raise such a family as does the queen-bee, whose sole duty is the laying of eggs and who depends upon her nurses to feed her young, and upon her workers to supply food, build the combs and guard the hive.

Like the mother polistes, the bumblebee starts the season alone. She finds a suitable crevice and starts her family with a waxen cell in which she lays an egg, and a waxen honey-pot in which she stores a bit of food. As the season advances and her family grows, she receives some help from the maturing workers, who assist in the duties necessary for the care of the growing family. The summer closes with only a few dozen individuals present, with an insufficient store to survive the winter, and the family scatters. The fertile females that are fortunate enough to find a safe place for hibernation survive the winter and begin again when spring comes, each establishing a home for herself.

The bald-faced hornet and the yellowjacket are a bit higher in the scale. The nest is started by a single fertile queen as in the case of the others; but they build more rapidly, the family increases faster, until several thousand individuals may be living together in the large paper nests. These nests are often a foot or more

in diameter. I was greatly surprised to find the nest of a family of yellow-jackets attached to a fallen tree in the Peace River Valley in northern Alberta. One would hardly think it possible in the short summer of that region that insects of this kind could prosper, yet the nest was apparently equal in size and equally populous with those to be found in the States at the same season. Although the families are much larger and the nests more elaborate, the hornets and yellowjackets are unable to survive the winter together as do the honeybees. They have not learned to store a reserve supply of food, nor have they discovered that by clustering together they might maintain a warm house as do the bees. They feed mostly upon animal food, and when the insects on which they feed are no longer available the family scatters. The males and the workers all die, while the mated females, which are able to find a proper cavity in which to hibernate, live over to start new colonies the following year.

It is interesting to note how successfully the social wasps are able to meet the problems of summer. By joint effort they are able to build paper homes which protect them from rain and from a moderate degree of cold. They are able to defend themselves successfully against many of their enemies. The two greatest obstacles they have yet to overcome are the severe cold of winter and the lack of food at that season. In vain we speculate as to how long a time must elapse before they are able to imitate the bees in storing food and in warming their home by muscular activity.

The nectarina, however, wasps which live in warm countries, go much farther in the same direction. Although it is thought that they still feed their young principally on small insects, the adults eat honey and have learned to store a reserve supply in their combs in much the same way as do the bees. The nectarina have much the appearance of our common yellowjackets. At first glance their nests appear to be much the same. Upon close examination, however, it will be seen that the interior of the nest is very different. The yellow-jacket builds horizontal combs with open end down, and a paper shell over all. The nectarina builds a shell with cells on all sides of each layer, opening in every direction. As the family grows, additional layers of outer case are built and on each cells are added as needed until the completed nest reaches a size equal to that of the bald-faced hornet, or larger.

In the July, 1920, and the January, 1921, issues of the American Bee Journal is told the story of a family

of nectarina brought to Illinois from south Texas and of the nest they built in their new home.

The nectarina has progressed much farther than the other wasps with which we are familiar. Living in warm countries, they are not under the necessity of clustering together for the generation of heat in order to survive the winter. Until they do, they are not likely to extend their range into colder regions. They have many characteristics of the bees. They lose their stings when they make an attack, as do the bees. They store honey and they swarm in similar manner, yet they make their nests of paper and their combs of the same material as do the other wasps.

After observing all these variations of habit on the part of the relatives of the honeybee, one cannot but wonder whether she also, during the millions of years that have passed since she first appeared, has gradually developed through all the stages from the solitary bee making her nest alone to the highly organized community with which we are familiar.

### A Local Village Industry

Mr. Harry Seamark carries on at Willingham, Cambridge, England, the ancient industry of making straw hives for beekeepers. His father and grandfather before him carried on the same trade, and Mr. Seamark was cradled among the bees. He not only makes the old-fashioned skeps, but keeps a large number of bees in the modern wooden hives, and there are few things about bees and their management with which he is not familiar. It is remarkable that there is still a large demand for the straw skep. Willingham hives go all over the world.

This year Mr. Seamark has accepted the post of expert to the local association. He gave a most interesting demonstration of his craft before a large and fascinated audience.

The skep is a coiled basket with a core of straw, sewn with a weaver of osier or cane, open at the bottom and either dome shaped and closed completely at the top or made with a flat top in the center to give access to an upper story. The tools used in making it are simple and home-made; a boxwood cleaver to split the osier rods, a shave to pare down the strips, a ring of cow's horn to keep the coil even, and a "needle" made from the blade of a fenman's patten (anglice skate), complete the outfit. Mr. Seamark sits down to his work, and it is wonderful how quickly his stubborn material grows into shape and yields to his apt manipulation.—From the New Zealand Smallholder.



BETTY BEE

I WONDER how many beekeepers actually realize what an Aladdin's lamp we hold in our hands in the shape of HONEY. We hear its virtues discussed, we sing its praises, but most of us are too eagerly watching its market value and its marketable opportunities to fully appreciate its real worth.

No doubt all of us remember the flu epidemic of 1918-19. This winter another and similar visitation has been upon us. We take these as a matter of course. But should we? There is a reason for all things. Why these flu epidemics? Why these annual winter colds? Why colds at all?

A year or more ago our local women's club had the privilege of hearing a series of lectures on "Colds and Vitamins" by a professor from one of our nearby universities, and I think he gave us more practical knowledge and honest common-sense than the average.

Why do we have colds? In the first place, as I understand it, colds are not necessarily caused by the presence of a "cold germ," as is most generally thought, but because our systems are in just the proper condition to give a "cold germ" the chance to mature and get a foothold with us. If you place a cake of yeast on your pantry shelf, the little yeast plants do not begin to expand and grow until you give them some flour and honey and a bit of warm water to grow in. This professor explained cold germs are everywhere about us; but if our systems are in the proper shape, they have no more power to harm us than the little cake of yeast upon the shelf has power to grow.

Now what puts our systems in the proper shape to germinate these cold germs? That is the place where we have the power to be well or ill. Two conditions in the human system seem to be responsible for the germination of these: First, the accumulation of waste matter; and, second, the absence of what is known as the "sunshine vitamins" in our foods. As the

## Colds, Vitamins, and Honey

By Betty Bee

chilly days of autumn and early winter come upon us, it is a bit more difficult to take our daily plunge, to thoroughly cleanse the skin. This thrusts upon our kidneys too excessive duties. Moreover, as the frosts take our vegetable gardens, and our appetites are stimulated by the more invigorating atmosphere, we are inclined to let up on green vegetables a bit and satisfy ourselves with a greater proportion of proteids, starches and sugars, which thus add to the waste of bowels and stomach. By this all the excretory organs are given heavier work to do, with less daily bathing and green roughage to help them, so our systems meet the new year in a none too healthy condition at best.

Now, in addition to this, sunshine is a great enemy of "cold germs," and as the sun shows its face less during the gray days of winter and its rays are weaker, we get little of it to help us along. Nature has foreseen this and has wisely concealed sunshine in palatable and delicious food forms if we will but accept them. Sunshine has been preserved for us in the leafy green tops of lettuce, spinach, kale, cabbage, carrots, endive, etc. Then, too, we find these wonderful sunshine vitamins in cow's milk (unpasteurized) from thirty to forty days after the cows have been taken away from their green pastures. That is, a cow taken from her natural green foods, the middle of December, can give to us milk with sunshine vitamins until the middle of January or the first of February.

Consequently we realize the double importance of the green leafy vegetables as roughage and a source of sunshine, while milk, especially in early winter, is almost a necessity. So far, so good. Then, to supplement the shortage of sunshine vitamins in milk during January and February, the good professor introduced us to the lowly codfish, in whose anatomy, he told us, the Lord, for some mysterious reason and in some more mysterious way, has seen fit to store great quantities of sunshine vitamins, known to modern commerce as cod liver oil; and to supplement the green vegetables and milk, our good professor recommended the daily ration of this delectable delicacy (?) to our club women, and departed amid the admiring thanks of one hundred enthusiastic ladies.

It seemed cod liver oil we must have, and some bright soul with an eye to business suggested we buy,

wholesale, one scientifically recommended and prepared brand, sell it at retail to our respective members and place the proceeds in our club house fund. We did it, and for the next six weeks our club fairly reeked with cod liver oil; we almost glittered with the radiance of its sunshine vitamins. Of course, with true club loyalty I bought some, feeling it my duty as a wife and mother my own family should have our fair share of this health-giving elixir. In its consumption John balked completely. The children objected strenuously. I coaxed oratorically and extensively, but the bottle stood upon the shelf untouched, a mute offering upon the altar of scientific feeding. Then a brilliant idea came to me. It must not be wasted. Someone must have the benefit of all those alluring sunshine vitamins. Tabby had just presented us with five new, beautiful, but entirely unnecessary, kittens. I felt sure she and they were in absolute need of just such vitamins; besides, who ever heard of a cat that does not relish fish? I was delighted with my cleverness and true sense of economy, so I poured it out in her pan. She came willingly, gave one sniff, shook her feet in a most disgruntled and dignified manner, and departed. The family goat immediately appeared, probably scenting mischief (it smelled like mischief all right by that time), gave it an investigating sniff, carelessly tossed the pan into the air, where it coquettishly balanced on one horn a moment, its contents drizzling down over his eyes and nose; then the offending pan landed into the nearby currant bushes, and with a snort Billie departed to be seen no more that morning. I laughed at Billie, then I realized that both Tabby and Billie had really better sense than I had had.

Anything so disgusting, so repulsive as cod liver oil was never meant for human consumption, even though it had untold millions of vitamins. The food the Lord intends us to eat is pleasant, nourishing, attractive. And right there, in our own honey house, was an abundance of just such a food, so rich in food elements as to make every codfish in the sea sigh with relief!

Gathered from the flowers beneath the smiling summer skies, fairly steeped in the sunshine itself—why don't our scientists emphasize that phase of HONEY more? HONEY, THE SUNSHINE VITAMIN PRODUCER! If I were a government expert or a university chemist or bac-

(Continued on page 87)

# Practical Points on Saving Beeswax

By H. C. Dadant

## Part One

IT is safe to assert that beeswax is worth saving at all times, as the market for it has remained practically stable over a long period of time. There have been but few breaks in the price, and only one can be recalled during the past twenty-five years. Any product which does not fluctuate beyond the average with other commodities, comparatively, as beeswax has been doing, is an encouragement to the producer. Every ounce of beeswax saved is worth while, as one may be assured that the cost of producing and saving it will be well repaid by a price averaging near 2 cents an ounce.

The one break in the price alluded to happened following the close of the World War. This occurrence was rather peculiar and unusual. Several factors contributed to it, the price moving below the low level of many commodities during the adjustment period of 1920 and 1921. In explanation of this, we must go back to the years previous to 1913. Among the statistics of foreign countries, importations of beeswax into Russia were given as 5,000 to 6,000 tons per year. Russia was then consuming from ten to twelve million pounds annually in addition to the beeswax produced in the apiaries of the beekeepers of that country. Since Russia is only beginning to develop commercially, the great consumption of beeswax in that country was confined mainly to candle factories operating for the Greek churches of Russia which were supported by the rule of the Tzar. The churches were wonderfully furnished with most beautiful candelabra, requiring hundreds if not thousands of candles each. The sudden closing of foreign ports, followed by the overthrow of imperial rule, suddenly diverted much beeswax to the open market.

In July, 1913, a number of shipments of beeswax destined for foreign ports arrived in New York City and were sold at a price of a few cents per pound below the existing market. This wax, however, was limited in quantity and the market of the United States soon assumed a normal tone. It was not until later that sufficient space on ocean-going vessels was available to transport such commodities as beeswax. Large quantities which had accumulated during seven years in countries such as Africa and South America began to move onto the market suddenly. With Europe buying little, the market broke to an unusually low record. This, together with a general land-

slide in all commodity prices in this country, brought about a condition which caused beeswax users to buy only from hand to mouth, fearing every day that new low records would come. Such fears were well founded, as large supplies and cut prices continued for months. In fact, New York prices dropped from 45 cents down to 32 cents one fine day in May, 1921, and from this point the price steadily declined during the next few months until less than 20 cents per pound was reached, with some sharp declines for a short period of time around 15 cents.

We need not be concerned today, however, regarding a break in the beeswax price, as the market has remained steady since those unusual days. So small a country as the Island of Madagascar exports one to two million pounds per year, which gives us some idea of the import field. The United States imports some 400,000 pounds per month on the average. The use of beeswax is spread over a great many industries, between fifty and one hundred being named, and overproduction need not be feared.

During the first foulbrood scare a few years ago, a prominent authority connected with the beekeeping industry suggested that all bees would need be shaken from combs each year to control disease. At the period of low prices on honey preceding the war, the same party suggested that colonies might be run for wax production instead of honey. The honey market is sometimes discouraging, but low prices would not justify destruction of good, serviceable combs. Saving beeswax to this extent is not justified, since the one-fourth pound in a comb is worth less than 10 cents, while in the apiary its value is at least 25 cents, in addition to the frame, and usually considered more. It must also be remembered that from seven to twenty pounds of honey is required for bees to secrete a pound of beeswax. Honey would need be worth but 2 to 3 cents per pound to justify a practice of melting good comb for the wax.

A profitable quantity of beeswax is obtained rather easily by the beekeeper, yet much is wasted or lost. Better methods and a little care will be well repaid by more wax. Some cream of the beekeepers' profits may be found here.

The rendering of material from the apiary containing beeswax has frequently been described as a mussy, laborious and exacting job. Beeswax in the comb or its crude form can at

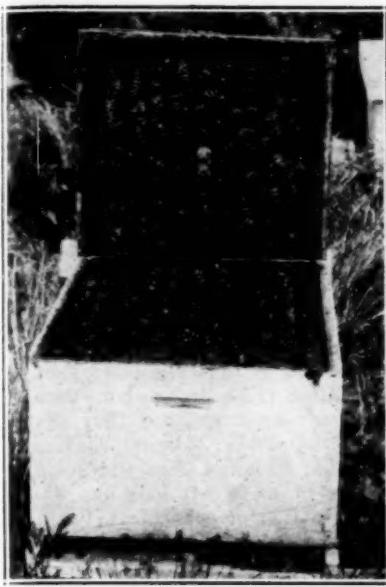
least be saved and shipped to those who make a specialty of reclaiming it in case the beekeeper decides not to render it himself.

Up to the present time, honey has hardly kept pace with beeswax as a staple product of the market. The four principal reasons for this are: (1) Honey has increased in production faster than beeswax; (2) during our modern practice there are a great many more uses at the present time for wax than honey; (3) other sweets, principally sugar, flood the market, and (4) there is undoubtedly a lack of proper distribution and demand for honey as a food.

The beginning of the developments in the production of beeswax and honey dates back to the time when the ancients kept bees in any convenient log, box or old-time receptacle. In those days beeswax was prized, as it was probably the only kind of wax available. The crude methods then in use of keeping bees and harvesting their products have not been improved upon to any great extent in parts of such countries as Africa, South America, and even some localities in Europe. The natives of some countries still follow the method of destroying the bees, straining the honey through cloths, and melting the wax by crude methods. In fact the combs containing decayed dead bees and brood are melted together in holes in the ground, over a slow fire, which accounts for the reputation of rank odor African beeswax has.

The writer wishes to appeal here to beekeepers. Please keep comb separate from cappings, as the rendering process of each is quite different. Do not allow bees to get into your comb barrel, and if brood is present, boil the combs at once with plenty of water. There are few materials more foul than dead brood, and the beeswax resulting is a poor grade, not worth full market price. Moreover, much work is necessary to purify it. In some parts of Europe, owners of bees still keep them in immovable comb boxes, practice killing them at the end of the season, after which the contents of the crude hives are sold to a central plant, where the honey and beeswax are reclaimed.

Modern methods of beekeeping have practically replaced the old, until today each one of us is obliged to adopt economics in producing and saving the beeswax and honey in order to compete with our fellow producers. Beeswax may be lost at several different points about our



Most hives will deliver a harvest of wax

apiary. Destruction by moth is probably where the greatest waste occurs, both in the apiary and honey house. Hundreds of combs are sometimes destroyed by the moth in a short space of time. In the latitude of central Illinois, moth may destroy combs as early as May and continue throughout the summer and early fall. Hard freezing weather kills them in all stages, and the only places moths may survive our cold winters is when hidden in the hive in some corner or crack away from the bees and yet protected by the heat of the cluster. They may also survive in heated buildings where bee combs are stored. Combs in a tight box or good fitting hives are quite safe from moth in spring and perhaps early summer after passing through a cold winter. Although several weeks are required for the moth to develop during very cool weather, they grow rapidly in the heat of summer, the range being from about four weeks in summer to twenty weeks of our mild winters in the southern states, from the egg to the miller. In fact, the full development of the moth has extended over thirty-one weeks in temperatures just above freezing, as shown by F. B. Paddock.

It is necessary to inspect combs at least once a month and treat them, if necessary, with such materials as paradichlorobenzene, carbon bisulphide, or sulphur fumes, in order to destroy them and their larvae. Care should be taken to give combs a second fumigation within two to four weeks, as larvae in cocoons are well protected and may survive the first fumigation. Moth have been known to destroy comb foundation slightly and have even been found inside the cracks of cakes of beeswax, although

their consumption of beeswax in these cases is slow and small.

A strong application of paradichlorobenzene will kill moth. In fact, George Watt, of the Dadant apiaries, reports that a pound of the crystals sprinkled over a high tier of supers and then closed tightly produces a gas quickly and does the work well. In case combs are not infested by moth, a tablespoonful per hive body on a paper on top of the tier acts as a good "Keep Out" sign. Paradichlorobenzene produces a heavy gas, is not poisonous to human beings, and is therefore quick to apply, besides being reasonable in cost. A tablespoonful of carbon bisulphide poured on a cloth or placed in a dish on top of the frames is sufficient for one or



A capping can large enough to hold a day's run. When drained the caps are ready to melt into cakes.

two hive bodies. The liquid produces a heavy gas and is well suited to treat a high pile of supers in the honey house, but as it is inflammable like gasoline the crystals mentioned above are much preferred. Hives and supers should fit tightly to prevent escape of gas through cracks. Discarded combs saved for rendering should be also treated to prevent ravages of the moth. The burning of sulphur is cheap and good, especially when the entire honey house is to be fumigated. Two pounds of it should be sufficient for the ordinary small honey house. Five pounds burned rapidly may be needed in case of a larger building or one that is not tight. All combs should be well exposed; boxes of combs emptied on the floor and supers staggered in tiers to allow free circulation of the sulphur fumes.

Beeswax may be wasted or lost by allowing combs or scrapings of wax

about the apiary to lie on the ground to be melted down by the sun. Formerly, one of the best methods to encourage saving of wax scraps about the apiary was to have a solar wax extractor nearby, or a box about the apiary into which material of this sort could be placed. With the coming of bee diseases, however, it is best to carry all wax material into a building where the bees cannot have access to it and where it can be saved and fumigated occasionally against moth until rendering can be done.

Various methods of reclaiming beeswax are practiced, depending upon the material in hand. We shall consider the methods of procuring beeswax from cappings, discarded combs, new and old; refuse, such as sediment scraped from the bottom of wax cakes, and water-soaked wax, unfinished sections, slumgum, and propolis.

In rendering material about the apiary the beekeeper must keep in mind that beeswax is lighter than water. In fact, its specific gravity is about .965, which causes it to float readily on water. If cooled slowly, sediment will settle to the bottom of wax, which is important. Beeswax separates from its impurities by gravity. The beeswax floats and is the top layer. Immediately below is the layer of light refuse, cocoons, dead bees, etc. This material should always be saved, as it is rich in wax. The fairly clear liquid underneath is discolored water, while at the ex-



A smaller home-made outfit that does well for the small beekeeper

treme bottom is heavy dirt, impurities and propolis. Wax worth saving is seldom found here.

Cappings are secured by cutting away the wax sealing from the surface of combs of honey previous to extracting honey from the latter. If cappings are cut thin with a hand knife, about 1 1/5 per cent of the honey crop in weight harvested, on the average, will be secured in bees-

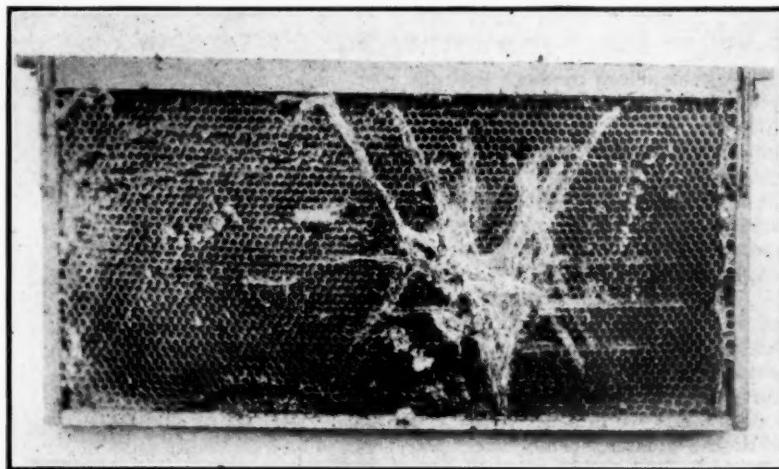


Cocoons of beemoth on wood of frames. From these come the moths that lay eggs for the next brood of worms

wax. Uncapping, however, is often hurriedly done, and cutting one-eighth inch or more in depth into the comb results in a greater percentage of wax. As some side wall of brood comb is often cut into, more impurities are present than in the case of thin cappings. Before rendering the wax, the removal of honey from cappings should be done as efficiently as possible. In fact, much honey is sometimes wasted by allowing it to remain in the cappings when the beeswax is rendered.

Two principals are generally followed at the present time for removing honey from cappings: (1) draining by gravity or centrifugal force and (2) a heating process with capping melter. In using capping meltters, the problem is one of temperature, since the melting point of beeswax, about 145 degrees, is the same as the limit to which honey can be heated without injury. Beyond 145 degrees, honey is liable to become damaged considerably both in color and flavor. It is a problem, then, of not overheating the cappings and yet bringing them to a liquid condition with the beeswax barely melted. In the operation of the capping melter there should be frequent inspection in order that clogging does not take place, thereby preventing honey and wax from remaining on the hot surface of the capping melter after the cappings become liquefied. A temperature of 150 degrees is not too high, provided it is of very short duration. Capping meltters operate best while cappings are warm and fresh from the combs with honey adhering to them. There is probably room for improvement in devices of the kind both for saving the beeswax and the honey conveniently.

If the draining method is practiced, the cappings should be broken up as finely as possible by stirring



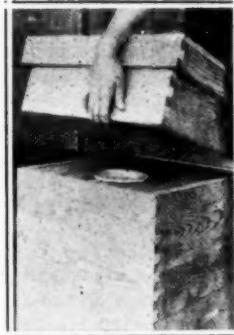
Tunnels of the beemoth larva through wax of comb. Finally the comb is entirely destroyed

them briskly with a clean wooden stick every twenty minutes or less during the day while the uncapping is being done. This idea is the result of experience showing that honey will drain away from small pieces of wax more readily than from larger flat pieces of cappings. The draining should, of course, occur during very warm weather or while the can of cappings is standing in a heated room of hot summer temperature. Another method which is being practiced by some who have power machines is to throw the honey out of the cappings by centrifugal force. In either of the last two methods the honey remaining is usually fully as much if not more by weight than the weight of the wax present. This honey may be washed out in water at about 125 degrees and the sweet water used for vinegar making, or the cappings may be melted over a capping melter to separate the remaining honey. The honey secured by the latter method will usually be off grade on account of overheating, but may be sold to

the bakery trade at a reduced price.

Separating cans are usually used in connection with capping meltters. Since the weight of beeswax is but two-thirds that of honey, the wax floats readily and is easily separated by gravity. Hot water should be added to the beeswax delivered from a separating can to dissolve all stickiness of honey and allow sediment or impurities to settle. Otherwise the wax may require remelting in hot water.

The beekeeper will find that there is nearly always some sediment at the bottom of the cakes. In fact, if the boiling is excessive, considerable residues may occur, but they should always be saved. The appearance is such that beeswax does not seem to be present, as it may look like water-soaked pollen or corn meal. Residues of this kind are sometimes called



Ready to put moth fumigator at top of a stack of combs

thirty minutes in order to avoid the possibility of allowing any disease germs to survive. The loose sediment or scrapings from the bottom of cakes of wax from this source or any other should also be saved, as it will be found to be rich in beeswax regardless of the fact that the appearance of such material causes one to believe that it is worthless.

## Experience with Big Hives in Canada

By John Tissot

We have been using the large hive for a number of years. It gives us stronger colonies, winters splendidly, requires less management than the smaller hive, and gives us 25 to 50 per cent larger crops. I think we could produce nearly as much honey with small hives, but of course it would require a great deal more handling, and we cannot afford to give this.

Also the storing of honey in combs in which brood has been reared gives darker colored honey than that from new, white combs, such as we have above the brood chamber of the Modified Dadant hive. In this hive the queen very seldom goes up to lay, in spite of the fact that we do not use queen excluders.

As to wintering, we record less mortality from the deep hives than from the standard, because the former contains more stores.

May I mention a thing that I have never heard? Bees in summer store pollen in the large brood chambers at the point they want it. In managing this hive we always leave the combs in their respective positions. In the small hives this is not true, since the frames are manipulated and the pollen often goes up with the surplus honey. As a result the small hives often lack pollen in the spring, while my large hives are forging ahead in spite of bad weather or lack of pollen in the fields.

We also make another good use of the Modified Dadant hive. We adapt it to wintering surplus queens, which



Here is the adult beemoth whose eggs give rise to the destructive worms that live in the combs.

are always handy in the spring. By inserting a thin, tight-fitting partition board in the center of the hive, five combs on one side and six on the other, we have very strong nuclei which winter well. When queens are not required, we let the queens fill up both sides of the board with brood, and in May we put the stronger one in a new hive with combs, and if given a little attention the original hive gives us a good crop. On one occasion we got 428 pounds of honey from such a colony and from another 360 pounds.

Of course, there is much less of a tendency to swarm in the large hive than in the smaller one.

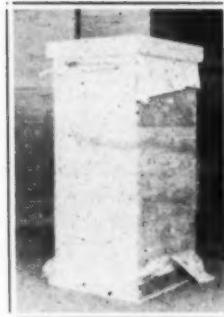
Let me not forget to mention the fact that we have taken all of the first prizes for white extracted honey for the last few years at the Ottawa Exhibition. That honey we always make sure comes from fancy combs above Modified Dadant hives in which the queen has never laid. The honey in these combs is sparkling, without particles of pollen, as often occurs with standard combs.

## Death of Mr. and Mrs. A.

C. F. Bartz

I regret to inform you of the death on December 16 of Mr. A. C. F. Bartz, of Keystone, Chippewa county, Wisconsin, who was one of the most widely known beekeepers of northern Wisconsin.

Mr. Bartz was one of the pioneer residents of Chippewa county, moving to that county forty-five years ago. He was engaged in beekeeping there for about thirty years, and at the time of death was managing about four hundred colonies with the help of his sons. His Eureka Brand honey is widely known in northern Wisconsin, and he has always been a leader in the movement for better



Same comb stack covered and safe from moths

methods of honey marketing, particularly the cooperative marketing of honey.

Mr. Bartz was followed in death, only thirty-eight hours later, by his wife, who likewise was a victim of influenza. Mr. Bartz was 69 years of age, and his wife three years younger. Both came to this country from Germany. They were married in 1884. Surviving are six daughters, two sons, and eighteen grandchildren. Their daughter Emma was for several years secretary of the Chippewa Valley Honey Producers' Association, with which Mr. Bartz was closely identified.

E. M. Daggit.

## Which Way to Turn the Comb

Theoretically, it should make some difference in the strength of a comb whether the foundation has been placed "right way up," with points of hexagons up and down, or "wrong way up," with sides of cells horizontal. A. P. Andersen, of Denmark, reports in *Tidsskrift for Biskjotsel* (December, Norway) how, having had complaints about some combs he had supplied, which were built on foundation cut and inserted as is usual in Denmark (wrong way up, it appears), he went further into the matter. The chairman of the Danish Beekeepers' Association, Hr. A. Petersen, expressed the opinion that the belief that there was a right and a wrong way to insert foundation originated in "inaccurate old writings," and that the bees, if left to themselves, build one-third of their combs "wrong way up." Hr. Andersen illustrates his article with a photo of a piece of comb, built in a skep by his own bees, in which the cells are all quite regular and all "wrong way up." (The question appears still to remain, however, whether comb wrong way up would stand up as well to trying conditions; for example, to great heat—whether due to the presence in the hive of a strong swarm in process of drawing the foundation out, or to the climate of the location.)

A. D. B.

## The Golden Trio

By J. E. Crane

HERE are some parts of our country where slipshod, slothful methods of keeping bees will pay, but for the most part it requires careful, intelligent management to meet with satisfactory success. For this success one thing should always be in our minds: that our hives should be full of brood and running over with bees when the flow of honey is on. To leave our colonies to build up and get strong enough to gather it, just as it goes by, is like going to the station to take a train and find ourselves too late. No amount of regret will help us out.

Now, to secure this very desirable state, three conditions are absolutely necessary during the spring. If they are not present, we must in some way supply them if we expect success. We will call these conditions "The Golden Trio," because of their exceeding value. They are easily remembered. Let me name them:

1. A good supply of honey.
2. A good queen.
3. Enough bees for brood rearing.

If any one of these conditions is lacking in any colony it is sure to prove a failure in securing a surplus. We may have an excellent queen and enough bees, but if the hive is short of stores, the colony will not build up in season for the harvest. We may have stores enough and bees enough, but if we have a poor queen our hopes are blasted. Again, we may have a colony with abundant stores, a good, prolific queen, but if there are not enough bees to nurse and care for the brood our colonies will remain too weak and feeble to secure any surplus.

I have never been so successful in wintering bees but that I had more or less colonies that were lacking one or more of these conditions. What is to be done to remedy these unfortunate colonies? We may do much by proper management. If a colony is short of stores it is an easy matter to give it a comb or two of honey from some hive that can spare them or from those we have wintered over for this very purpose, or we may feed them sugar syrup, so such a colony will prove as profitable as any.

If a colony has a poor queen, we may remove her and give it a good one, either from a colony too weak in bees to build up, or we may send away for one and so build the colony up to where it can gather surplus honey with the other colonies.

Again, we may have a colony that has abundance of honey, a good queen, but too few bees to rear sufficient brood to make a strong colony

in time for the harvest. What can be done to remedy this condition? Spreading the brood by dividing the cluster and inserting a comb between the two parts was recommended years ago, and doubtless did much more harm than good, as it enlarged the cluster without bees enough to keep it warm, and more or less bees on the outside of the cluster were likely to perish from the cold nights of spring. A good queen will usually spread brood as fast as the bees can care for it.

What is to be done? I have found it better, where a weak colony was to be built up, to take a comb of eggs and young brood from the weak colony and exchange with a strong colony for a comb of hatching brood. If the colony is very weak, I sometimes leave the comb of hatching brood covered with bees. These will help to keep it warm until enough young bees have hatched to do so. This can be repeated every few days until our weak colony is strong enough to take care of itself.

Let me offer a word of caution here. It will not pay to draw so much brood from our strong colonies as to weaken them. We should always remember that a half dozen strong colonies may give us more surplus honey than half a hundred weak colonies.

Our object during the spring should be to get as many colonies strong as possible with the bees we have, always keeping this end in mind. The above has been written with the thought of an early single honeyflow. During the past sixty years and more I have known only two years in which any surplus honey was stored after the first of August, and the importance of being ready has been pretty thoroughly impressed upon me. Could I have known and appreciated what I have written above, when I began keeping bees, it would have been worth many hundreds of dollars to me.

Where there is a late flow of nectar the above methods might be modified or altered to fit conditions.

I have tried to make plain the importance of strong colonies early in the season if we would secure a paying crop of honey. There are some other difficulties that should be mentioned. Skunks are a nuisance and may do us a good deal of harm by scratching at the entrance of a hive and eating the bees as they come out. They usually confine themselves to a few hives, going to the same hive many times, and so reduce a colony until too weak to secure a satisfac-

tory surplus. They can be easily trapped or poisoned and so save us a case of honey from such hives.

Toads will often nestle down close to the entrance of a hive. It doesn't look as though the clumsy things could possibly catch a bee, but let an insect come within an inch of its nose and see what happens. Its tongue flies out with almost the rapidity of lightning and the insect is safely lodged in its stomach. You can kill them if you are not afraid your cows will give bloody milk, as an old legend declares, or remove them to some place where they will do no harm.

There are other things to look after, as the size of entrance during the cool spring weather, the size of the brood chamber, the size of depth of frame used, the freedom of the brood combs from drone cells, grass or weeds in front of the entrance.

Let me review briefly what I have written. First, the supreme object of spring management is to get as many colonies as possible strong enough to gather the harvest when it comes. Second, this can be best secured by seeing to it that every hive has three conditions, a golden trio, that make for success: (1) a good supply of honey; (2) a good queen; (3) enough bees to care for a large amount of brood.

In reading over the above I see I have neglected to mention one important matter. In strengthening weak colonies in spring we should begin first with those that need but little help, leaving those very weak until the last. A single comb of brood given a colony that needs but little assistance may enable it to build up in time for the harvest, while it may require several combs to build up a very weak one. Better leave such until later, or until swarming time.

### Do Bees Have Scouts in Finding a New Location?

By John Gray

IN California bees are moved about in spring and summer as the bloom opens in different locations. I was moving to the oranges and first took a large load of full-depth supers containing only drawn comb. I stacked these eight supers high. Previous experience showed me that new swarms found these piles of comb supers and would try to take possession of the whole pile of eight, as if it were a hollow tree that high, full of nicely drawn comb. So I carefully placed wire increase screens near the top of each pile, leaving one full-depth super on top of it, with cover on top, but so arranged that

there was an entrance left where the top super fitted down on the wire increase screen. This allowed the new swarm to take possession only of the top super of the pile, if I had the rest tight.

As I lay by the pile of comb one day I was aroused by a large swarm passing overhead. They went on by, apparently paying no attention to the large pile of drawn combs. The air was full of bees. I ran wildly after them for at least three or four hundred yards. Then they seemed to be demoralized and commenced milling around in every direction. I could not tell which way to go. And you know, the thought struck me that scouts had brought word to that swarm in motion that there was a better home back there they had just passed, all ready to take up housekeeping in, than the hollow tree, house or rock pile they were headed for, and the bees were holding council over it in the air above me; and, not knowing what better to do, I ran at breakneck pace back to the pile of combs. And, sure enough, there above, at one of the miniature entrances, were a dozen or so of bees with wings fanning, and soon the others began to come in ever-increasing numbers. The swarm was so large that one body would not contain them, and when they all got clustered about I had to give them the second body. I am just as sure as can be that scouts found that top box with its little entry place and carried the news to the rest, in some mysterious way, as they flew, and that, too, before they got far, as they had passed directly over the combs. I caught many swarms later, before getting all the comb on the bees.

#### Letter from Alberta

The season this year opened with an ideal May and colonies grew rapidly and strong. June was a disappointment, being cold and wet. In fact the season all through was backward, wet and cold. The great amount of rain made a very luxuriant growth and bloom came later than usual, but did not yield as heavy. A close estimate will show a crop of two hundred tons, with four thousand colonies in operation. There was a great variation in yield according to districts. We have had until December 31 a mild and open fall and winter. Bees appear to be resting well, with very few dead bees carried out, and bees are quiet. The weather seems just cold enough, insulation about sufficient, and stores enough to keep them comfortable.

H. T. Luther,  
Lethbridge, Canada,  
Exp. Station.

## Boosting Honey Sales

By A. Gordon Dye

THERE are obviously many ways of stimulating honey sales. Some, by their nature, are such as the beekeeper can put over, while others require outside agencies and special talent to reach the desired parties. Grading and packing affect the sales of any product, and the beekeeper is responsible for the condition of the honey he puts on the market. No one is better situated to develop the local market. If the beekeeper's place is clean and attractive, if he puts up his honey in attractive packages, if he furnishes a good product and gives good service to the consumer or the retailer, whichever means he chooses to use in reaching the public, he is sure of a constant market which should improve from year to year as the reliability of his honey and his service becomes better known. But he must remember that satisfactory service to retailer or consumer today means being ready to deliver the goods when they are wanted any time during the year.

Attractive displays of honey at fairs and other places where foods are displayed is of great value and is peculiarly the field for the producer, but it will be of little value to him unless he is ready to serve the public he interests, either directly or through the grocers in their vicinity. All advertising has to be followed up by maintaining the standard of goods and by service.

But there are other methods of stimulating the use of honey which are not in the field of activity suited to the producer. Dr. Barnard is doing a fine work in one of these fields by bringing to the attention of large food manufacturers the possibilities of improving their products and sales by the addition of honey. Many new combinations of honey with other foods are being investigated and some promising results are in sight which will require large quantities of honey. Honey in soft drinks, in ice cream, in salad dressings, in cheese preparations and peanut butter are some of the possibilities in sight. With the advertising power of the manufacturers of such products and the vast quantities consumed, the use of honey in any of them is sure to absorb a large amount of honey.

There is another avenue of interesting the public in honey which should produce the greatest results. We are living in an age when people are more and more considering foods for health reasons. Dieticians are making out menus for all meals of

the day and housewives are religiously feeding their families accordingly. Special foods are recommended for all ages and physical conditions, and while honey has enjoyed a special place all through the ages for healthfulness, the modern dietician and doctor seems to have lost touch with its virtues. We producers need to get some up-to-date authorities interested in the study of honey, its nutritive and health qualities. We believe that for certain purposes it has no equal. Fortunately, we have the best of agencies ready to take up the study of honey if we make our wishes known with sufficient backing. The Department of Agriculture, at Washington, has had specialists studying several foods produced on farms, with a view to determining their special health values and the marketing problems connected with them, and it stands ready to do the same for honey if the beekeepers of the country request it. Reports and recommendations from this source would be of special value, as they would be recognized as fair and without over-stating, which so frequently is the case when commercial agencies advertise the virtues of a commodity, and the resources of the government for giving publicity to its findings would be of the greatest value to the honey producers.

At the recent meeting of the New York State Federation of Beekeepers' Associations we passed a resolution requesting the Department of Agriculture to set one or more men to studying honey, its nutritive and health values, and now if other beekeepers' organizations do likewise we may see honey regain its proper place in public estimation. We believe tradition was right in ascribing to honey especial health values, but since the modern mother and housewife looks to the modern scientist, dietician or doctor for her authority, we must secure their report and recommendations in order to meet modern conditions.

New York.

#### Honey Advertising

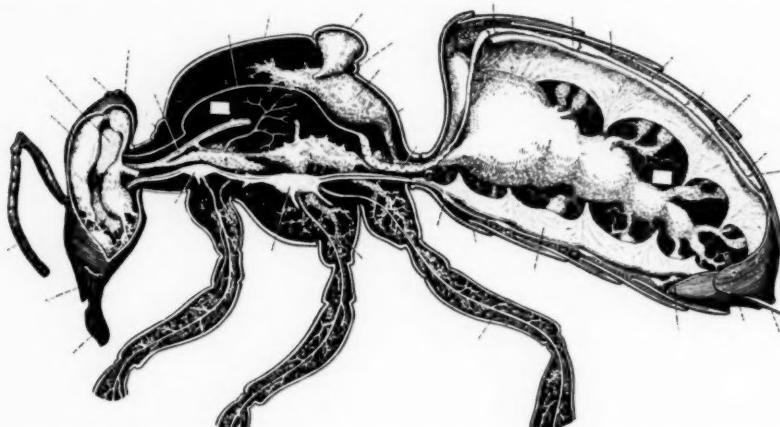
Display advertising of honey in the newspapers of the large cities appears to be on the increase. Through the kindness of a western reader, our attention was recently called to a double column advertisement of honey in the Los Angeles Herald. It was featured as a suitable spread for hot cakes, for cereals and for hot breads.

# The Heart and Circulatory System of the Honeybee

By Annie D. Betts

A PAPER with this title has recently been published by Dr. Karl Freudenstein (*Zeitschrift für wissenschaftliche Zoologie*, Vol. 132, 1928). Dr. Freudenstein has not only cleared up our knowledge of the anatomy of the bee's heart (which was uncertain on several points), but has followed, by a very ingenious

of the second phragma (Snodgrass), or mesophragma (Zander), which operates the upstroke of the forewings, and must therefore be able to move freely; the aorta, passing close in front of the second phragma, is forced to accompany it in its movements. Freudenstein shows, however, that neither of these explana-



Section through side of worker bee. The slender organ near the back, passing down through the waist and out to head, is the heart, described here. The big white sacks are the air passages.

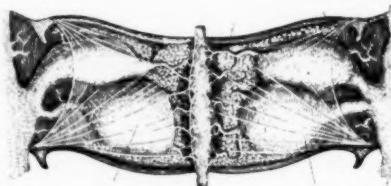
method, the course of the blood through the body. His main results are:

The heart of the bee (which, it will be remembered, is situated in the abdomen, along the middle line of the back) contains five chambers, separated from one another by valves. These valves are formed by the inturned edges of the **ostia**, or lateral apertures through which the blood enters. Thus Zander is in error in stating that the ostia are situated midway along the chambers, while Snodgrass is in error in stating that the heart has only four chambers. The valve and ostia which form the proximal boundary of the first chamber (i. e., that nearest the head of the bee) are, however, small and less conspicuous than the others. The work of propelling the blood is done mainly by the three hindmost chambers, which are the most strongly muscular.

The action of the heart proceeds by the passage of a wave of contraction along it from behind forward.

The aorta (continuation of the heart into the thorax and head) has a closely-packed series of loops at its passage through the peritoneal, or "wasp waist." Some have considered these to be a sort of valve, intended to prevent return of the blood into the heart; while Zander suggested that they served to permit the movements

tions is correct. There is no need for a valve in the position of the loops, and they cannot act as an extensible adjustment for the good reason that they are enclosed in a membrane, which must be torn before the loops can be pulled apart. On the other hand, this region is well supplied with tracheae; and Freudenstein believes that it may possibly



Section of bee showing part of heart in center and air sacks at the sides

serve as a place for the intake of oxygen into the blood—in other words, as a sort of lung. (This looped condition of the aorta is a peculiarity of the honeybee. The only other case known is a wild bee, a species of **Megachile**; and the question might well be asked: Why does the honeybee alone have this "lung"? Perhaps an answer may be found in the unusually large size of her honey sac when full. Armbruster found that the bee's sac had an average volume of 57.77 c. mm., while that of the wasps tested by him was 35.57 c. mm. Some as yet unpublished work by the

present writer confirms Armbruster's figures, 48 c. mm. being the greatest volume of a load of syrup found for **Vespa germanica** (which is a slightly heavier insect than a bee), while the largest bee's load was just over 70 c. mm. The bee, therefore, when flying home with a full load after robbing, has little room for respiratory movements of the abdomen, and may well need a special organ for the aeration of her blood.

The blood passes out of the aorta just behind and below the brain, at the spot where the oesophagus is suspended from the top of the head by two ligaments (Snodgrass, *Anatomy and Physiology*, page 17, Fig. 8, g). Here, too, the corpora allata are found. Some of the blood passes out by slits, which allow the suspensorial ligaments to pass to the oesophagus, and proceeds up the back of the brain; the rest goes forward, some of it up the front of the brain, some into a pulsating ampulla or vesicle situated between the roots of the antennae, and serving to drive blood into these important organs. The blood then takes its way back past the mouth-parts ("under the chin," as it were) into the thorax, where some of it goes direct back to the abdomen under the ventral diaphragm, and some passes up around the indirect flight muscles to another pulsating organ, situated in the scutellum, and serving to drive the blood to the wings and perhaps also to the legs. This organ has a special muscle-sheet and is actively pulsating, whereas the one in the head appears to be passively operated by the movements of the pharynx. Finally the blood finds its way back to the abdomen and into the heart, to recommence its course.

The dorsal diaphragm appears to be merely a passive elastic support for the heart, while the ventral diaphragm is, on the other hand, a very powerful pumping apparatus for drawing the blood back into the abdomen.

Dr. Freudenstein was able to ascertain these very interesting details by injecting bees, rendered torpid with ether, with a mixture of Indian ink, salt solution, and white of egg. He gives full details of his method.

## German Score Card for Honey

In reporting a large honey show at Eisenach, Germany, the Thuringer Imkerbote (October) gives the points used in judging honey, as decided by the local beekeepers' association. They are:

Cleanliness, 30 points; ripeness, granulation, 30; aroma and flavor, 20; appearance, 10; get-up, 10.

A. D. B.

## The German Attitude Towards Overheated Honey

By James I. Hambleton, Apiculturist,  
U. S. Dep't of Agriculture

A great deal of concern is being manifested by exporters of honey to Germany over the regulation in a recently enacted German law which classes honey in which the diastase has been destroyed or impaired in the same category as adulterated honey.

Diastase is one of the enzymes found in honey. The principal and most important enzyme, however, is invertase, which is, in turn, the substance that helps to convert the complex sugar found in nectar into the simple sugars of which honey is largely composed. Diastase does not play such an important part, although it is supposed to convert some of the starch and dextrin into simpler forms. Diastase is readily destroyed by heat, and therefore its presence or absence in honey is useful as a guide to determine whether or not honey has been highly heated.

The question of diastase in honey has received relatively little attention, and practically no investigational work on this subject has been done in the United States. The amount of investigational work on diastase even in Europe seems to have been limited. It is not known to what extent the amount of dia-

tase varies in honeys from different floral sources, nor is it clear that the presence or absence of diastase affects the food value of honey.

The fact remains, however, that Germany regards diastase as important either from the standpoint that it is an essential ingredient of honey as a food or from the standpoint that the amount of diastase is used simply as a reliable guide to detect overheated honey. If it is for the latter reason, the regulation is justifiable, as it represents the wishes of the German people to permit only the importation of unheated honey. It is true that the amount of diastase gives an excellent indication as to how much the honey has been heated. From the standpoint of the desire of the German people to prevent the importation of overheated honey, the regulation cannot be condemned, as all beekeepers are fully aware of the fact that overheating honey injures not only its color, but, what is of more importance, its flavor.

Already large shipments of honey from the United States have been refused at German ports of entry. It seems that the German inspectors permit this honey to enter, but if so, the honey must be sold to the baking trade, with the result that a number of exporters who have shipped honey to Germany as table honey have had to suffer large losses, or cancellation of orders.

Exporters complain that it is difficult to make up large shipments of unheated honey, as some beekeepers from whom they buy practice heating, while others do not. Some of the exporters are taking steps to analyze every can of honey in order to comply with the German requirements.

If ordinary care is followed in extracting, it is not necessary to heat honey. The honey from uncapping meltors should by no means be added to the honey which comes from the extractor. When the honey is very heavy, and it becomes necessary to heat it in order to facilitate straining, in no case should any of the honey be heated to over 140° F. It would still be better if the honey were heated just enough to strain out the particles of wax which are thrown off by the extractor.

Not only does heating impair the flavor and color of honey, but it also retards granulation. It should be borne in mind that in 60-pound cans losses in transit are much less when the honey is granulated. For these reasons beekeepers should not go to the unnecessary trouble of heating honey. Furthermore, in order to safeguard foreign markets, exporters who buy from beekeepers will be forced to pay lower prices for honey which cannot be guaranteed to be unheated.

For domestic trade, of course, it is often desirable to maintain extracted honey in the liquid form, and this may require heating the honey. Even for domestic sale, however, honey should not be heated over 140° F.—(From Honey News Letter, Nov. 1.)

## Good Results in the Wabash Valley



We are always getting something here, in the Wabash Valley. In the spring we have maples, dandelions, poplars, locusts and elms, which are very good stimulators. Following these, we have white clover, some basswood and sweet clover, which brings us up to our fall flow of smartweed (heartsease), wild cucumber, Spanish needle and white aster. We have lots of goldenrod, but it doesn't

yield. For the first time I have seen white-top yield nectar the past season.

Last year I started the season with 47 colonies, increased 22, and took off 5500 pounds of honey, most of it section comb honey.

This is not a record, but not so bad for comb honey, I don't think. This year I secured 50 pounds per colony and increased to 80.

L. R. Stewart, Indiana.

## Mountain States Shipments Go Abroad

D. H. Hillman, State Apiarist, reports some 140 carloads of honey were shipped by the Mountain States Honey Producers' Association during the past year, most of it going to foreign markets.

A lot of this honey went to Germany, Mr. Hillman reports, and these shipments were in addition to the shipments by individual honey producers who are not in the association, but who shipped in carload lots also.

One Utah man produced and shipped twenty-eight carloads of honey, the State Apiarist reports. Several others produce from one to half a dozen carloads each year, it is stated.

G. P.

## Honey on Ham

I am very fond of honey and fried ham. I spread honey over my hot ham for breakfast and like the flavor. Try it for yourself and be surprised how good it is. H. C. Mellon.

## "Pointing Out" and "Helpful Hints" Help Honey Advertising

How Producers Suggest What Merchandise Will Do for the Buyer and Tie Up with Personal Motive of Readers

By A. A. Shields

SOME of the most effective advertising by honey producers has a very valuable quality—it is always pointing out things to the consumer instead of trying to overwhelm him with arguments. Helpful hints are often given.

When a man sits down to "write an advertisement" he generally becomes self-conscious. He is like the schoolboy speaking his piece before the school and visitors on a Friday afternoon; he is thinking more of the flourishes for his delivery than he is about the thought that he is to deliver.

There is too much worship of advertising for advertising's sake upon the part of some advertising men, who want to make it seem to be a mysterious and difficult rite. The newspaper advertisement is most helpful to the honey producer when it carries to the consumers helpful suggestions and reminders that likely will interest them.

As David Dulaney said, in Printers' Ink, about the man who writes advertising:

"Frequently, it is not a knowledge of advertising he needs most, but a knowledge of the mechanics of life."

If you approach the job with the idea "I'm going to write an ad," you are likely to think too much of the high-power selling you have heard about and put on too heavy pressure and urge people to patronize you.

Your readers—if you have any—are not going to remember your urging.

What will they remember?

"Facts for which we have no use are forgotten," said Edgar James Swift, an authority upon the workings of the human mind. Personal motives, of course, play the leading part in a good memory.

Therefore, if the honey producer can get into the beginning of his advertising something that ties up with their personal motives, they are likely to pay attention. That's why "you" or "your" is always a good word to get into the headline or opening paragraph—and elsewhere when it is natural. When you start to talking to "you" it isn't quite so easy to order a man to buy.

Maybe honey producers can apply to their products what Miss Helen Landon Cass, advertising manager

for an Albany store, told the convention of Associated Retail Advertisers:

"People don't buy things to have things; they buy things to work for them. They buy hope—hope of what your merchandise will do for them. Earrings we buy, not as twinkling bits of jeweled metal, but because they will give us youth or age, sophistication, piquancy or romance. We are trying to buy the gifts of the gods, two for fifty-nine cents."

And consumers buy honey for what they think it will do for them.

As a rule, when you talk merchandise quality too strenuously you are trying to make people change their minds. A mind can never be changed, according to G. K. Chesterton, who says that a mind in a sense always remains the same type of mind that it was at the beginning. The way he explains what is commonly called "changing the mind" is that "I have found what is, strictly speaking, more to my mind."

Giving helpful hints about honey and its uses is likely to make a man or woman feel that a particular kind is more to his or her mind.

Therefore, in considering the advertising of honey, it is essential to recall what Charles W. Mears, a marketing counselor of Cleveland, said about merchandisers who had a tendency to try to shove goods on people:

"But people do not want goods shoved on them. The lives of human beings are governed by wants, desires, longings. But does any merchandiser think of these all-powerful influences as the biggest factors in his success?"

Have I pointed out anything to you—given you any helpful hints?

### More Honey News

A recent issue of the New York Sun carries an interview with Prof. R. H. Kelty concerning the uses and quality of honey. Kelty is quoted to the effect that honey is being used to replace glycerine in several manufacturing processes. He is also quoted as to honey and beeswax in such a way as to leave a good impression in the mind of the reader. Such publicity is good for the industry.



How some honey users point out buyers. It publicity and advertising

## Creosote as a Hive Preservative

By E. W. D. Madoc

MANY years ago I painted all my hives. All the joints were painted first before assembling. After the hives were made up, a coat of priming was given, followed by three coats of the best white lead paint. The result was decidedly good; the hives remained weatherproof and sound for a long period, and if they were washed down, dried, and given another two coats of paint every three years, they would last indefinitely.

While I had only a few hives this was perfectly satisfactory, and the amount of time and paint used were negligible.

Later on, however, as my numbers grew, I found that we were painting day after day for weeks, and the paint bills assumed alarming proportions, so much so that I began to seriously contemplate the idea of cutting out painting altogether in favor of more constant renewal of hives as they became too dilapidated for further use.

Before doing this, however, I decided to try out the merits of creosote, and I am now satisfied that it is cheap to apply and satisfactory in use.

Creosote is one of the by-products left during the production of gas from coal. It is separated from tar and other residuals by distillation and may be defined as that which is given off between a fixed minimum and maximum temperature. Commercially, some of the biggest consumers are the railway companies, who use it as a preservative of all their wooden sleepers to which the rails are anchored. It is also much used in the preservation of wooden buildings, gates, huts, hen houses, and in fact on almost any wooden structure that requires preservation from the weather.

The action of creosote on wood is quite different from that of paint. Creosote is a form of pickle and prevents rot by the inhibition of the growth of the fungi which are the cause of decay in wood. On the other hand, paint forms a waterproof coat on the surface of the wood through which no moisture can pass.

It is impracticable to use paint on unplaned wood owing to the difficulty of applying an impervious coat and on account of the excessive quantity of paint required.

Creosote, however, is quite suitable for this purpose. It requires rather more than for planed wood, it is true, but creosote is very cheap; I pay 18 cents a gallon in forty-gallon casks from the local gas works.

In applying creosote to beehives, I soak the bottoms, stands and roofs in a tank of creosote, before nailing up, for twenty-four hours. They are then placed in racks on a large sheet of galvanized iron with edges turned up to form a trough and sloping towards the tank to drain off. The brood chambers and supers have their joints creosoted before assembly and a coat or two of creosote brushed onto the outside and top and bottom edges after nailing.

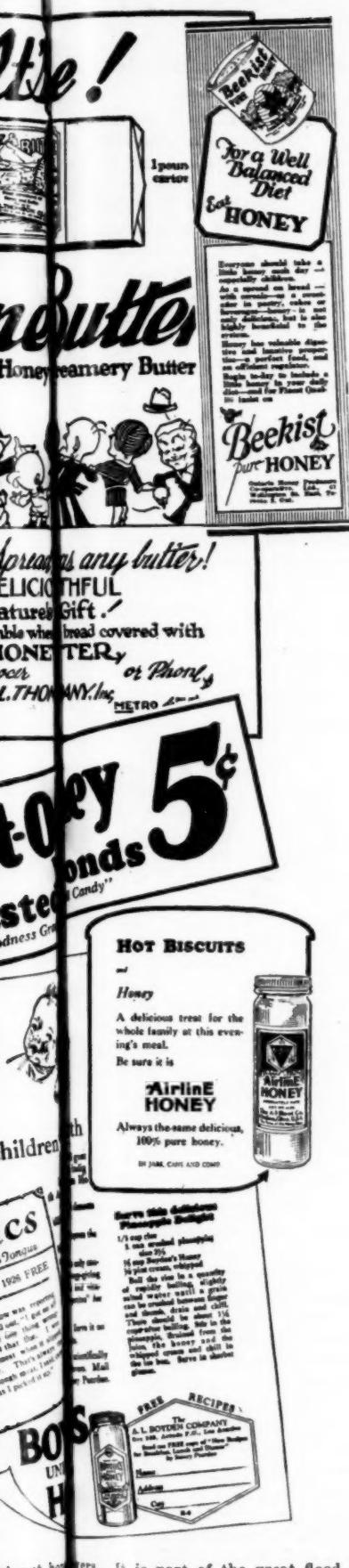
Creosoting should always be done at least two weeks before the hives are needed for use, and preferably much longer than that. For some time after creosote has been applied to wood it gives off a strong smell, and if bees are put into the hives too soon there is great danger of robbing, as the smell of the creosote is so strong that the colony odor is obliterated.

It is difficult to say how long the hives should be creosoted before bees are put into them, as temperature has so much to do with it. A hive that has been creosoted and stood out in the open for one week during warm, sunny weather is much more likely to be ready for occupancy by the bees than one that has stood for a month in a cold building during the winter.

I remember one year I was short of old hives in the early spring and hived ten lots of package bees, that arrived from France in the middle of April, in new hives that had been creosoted six weeks before. Until then we had had no warm weather, but soon after they were hived we had a week's glorious hot weather, and during that week they spent their whole time in robbing each other. The sun had warmed up the hives, and the creosote, drawn out by the heat, smelled so strongly that the guard bees were quite unable to distinguish friend from foe. There was little fighting, and after a few days the smell wore off and after giving very small entrances for awhile the packages were built up for the honey-flow without further trouble.

Hives that have received one or two coats of creosote applied with a brush are ready for occupancy much sooner than those that have been soaked in a bath of creosote for twenty-four hours, but the latter method makes, of course, a much better and more lasting job.

Creosote is of no use on galvanized iron, and the metal tops are given two coats of white paint every few years, partly as a preventive against rust and partly to reduce heat. A piece of comb placed on an unpainted



roof in the sun will very soon melt even in this temperate climate.

The dark brown color of creosote is against it in that it absorbs heat instead of deflecting it as does white paint. I have not been able to see any difference in results, however, either in discomfort to the bees in hot weather or in an increased tendency to swarm, and the difference in temperature between the inside walls

of a painted hive and of a creosoted one is very small.

There are several proprietary wood preservatives of a creosote nature on the market at high prices, but I have not found them to give any better results than the ordinary creosote, and the lighter colored ones are, I am told on good authority, almost useless for outdoor work.

England.

## Loss of Weight of Syrup Fed to Bees

By Annie D. Betts

MUCH interesting work has been done in Russia during the last few years, nearly all of which is unknown elsewhere owing to its having been published in the Russian language. In *Pchelovodnoe Delo* (Moscow) of January and February, 1927, A. Gubin describes his experiments on the feeding of bees with sugar syrup made from 1922 onwards. He cites the work of Koven (1913), who found that when three colonies were fed syrup (two parts sugar by weight, one part water) the average loss of weight amounted to 34.9 per cent of the total weight of syrup fed. From this Koven concluded that the syrup stored by the bees in their combs is equal in weight to the sugar in the original quantity of syrup fed. A similar experiment made at Kazan in 1922 showed the average loss to be 38 per cent of the original weight of syrup. The observed loss fluctuated from 27 to 45 per cent. This variation was possibly due to robbing having taken place. (Perhaps also to colony consumption.—Editor.)

Data obtained at the Moscow Experiment Station in 1922 also showed that the loss of weight approximated to that of the water in the syrup as fed. It would appear to follow that the beekeepers' custom of reckoning the syrup fed as equivalent to an equal weight of honey is wrong. The experiments up to this point were not, however, held to be conclusive; when circumstances permitted, therefore, further work was done on the matter.

Four colonies of bees were used for these later experiments, two being fed one strength of syrup (No. 1, two parts sugar, one water), and two with a stronger (No. 2, thirty-two parts sugar, nine water). Both syrups contained also 10 gm. citric acid per 32 kg. sugar. No. 2, being supersaturated, tended to crystallize in the feeder, and more citric acid was therefore added; it was also boiled long enough to turn it somewhat yellow. One of the experimental colonies failed to take down syrup No. 2, and the other took it very unwillingly, taking only 6 kg., while the two colonies receiving No. 1 syrup

took down 11 to 13 kg. During the experiments the bees were confined to their hives by means of cages which, while preventing any ingress or egress of bees, allowed them to throw out dead bees, rubbish, etc., which accumulated in the cages. Samples of the syrups, as fed, were examined for water content. No. 1 contained 30.47 per cent; No. 2, 20.07 per cent. Hives were weighed daily, before and after putting on the feeders, for several days. The colonies receiving No. 1 fanned; that receiving No. 2 did not (due, no doubt, to the syrup being already concentrated enough).

Subsequent examination of the "syrup-honey" in the hives showed that its water content averaged 20 per cent. Since the hives were weighed for a day or two before the feeding began, and the bees had had no access to outside supplies, it was possible to calculate roughly how much weight had been added by the feeding. With both syrups the loss of weight of the syrup stored compared with that fed was nearly equal to the weight of water in it. It was also shown that the sugar lost (used up by the bees for food during the extra work involved in storing and sealing the syrup) amounted to about 20 per cent of the actual weight of sugar fed.

This shows that the beekeeper can only reckon on the storing by the bees of a weight of syrup equal to the weight of sugar he put into the feeders. Since this inverted and stored syrup contains 20 per cent of water, it can easily be shown that this implies a loss of 20 per cent of the sugar fed. Let the syrup be of strength X per cent—that is, X lbs. sugar to 100—X lbs. water. Let Y lbs. sugar and Z lbs. water be lost, and let the syrup remaining in the hive contain 20 per cent water. We then have X—Y equals 4 (100—X—Z), since the final quantity of sugar is four times the weight of the water. We also have Y plus Z equals 100—X. Whence Y equals 100—X—Z. So that X—Y equals 4Y; or Y equals 1/5 X. The two experimental results are therefore not independent.

## Problems of Immunity and Disease

(From New Zealand Smallholder)

By Leonard S. Harker

Mr. R. A. Hillary obtained the second prize for his essay, in "The Hopkins Memorial" competition, on the subject of how best to serve the interests of the industry, at the Ruakura State Apiary. His three points of interest were: (1) Elimination of disease. (2) Good young queens of a high producing strain. (3) Increased consumption of honey. (August number).

Mr. Hillary's article is reviewed in the September number, no name given, and here is the very excellent summary of item No. 1.

"... To select queens from apparently immune hives, plunge them into diseased surroundings, and reselect and accentuate the immunity by skilled mating and breeding among those of their progeny that again prove immune."

So far, so good. The reviewer next proceeds to lay about the scientists with his shillelagh for failing to produce an immune bee so that the industry can become a gold mine.

The problem to be solved is a very complex one and we must try to see the question in its whole and avoid a one-sided view. We must consider the inter-relation of beekeeping with all of the great forces of nature—soil condition and nutrition of honey, sources in relation to disease, etc. Let us try and consider the curse of sugar feeding and the great havoc wrought on generations of bees. Just take the case of soil nutrition and sewage disposal and the wasteful method of nourishing seaweed at the expense and impoverishment of agricultural land. There is no need to go into details. We can only divorce ourselves from Nature's laws at our peril.

England.

## From Louisiana

A story is told on a prominent beekeeper who was accustomed to making a one day a week stand in the market selling honey. One day a lady customer approached him with anger in her eyes. "Mr. S," she said, "the last bucket of honey I bought had a yellowjacket in it." Mr. S replied in an embarrassed and stammering manner: "Yes ma'm, yes ma'm, I know; you see we always put a bee in to show the honey is pure, but last week, when we bottled, it was getting late and the bees had all gone in, and I just told the boys to catch a few yellowjackets that were flying around and use them. I didn't think you customers knew the difference."

# My Experience in Fall Treatment of Foulbrood on Gassed Combs

By Leroy F. Baxter

AFTER reading Mr. Smith's article in the American Bee Journal last spring on the new method of treating American foulbrood with formaldehyde gas, it seemed so reasonable and absolutely certain of success that I plunged in headlong to clean up the disease among my bees and equipment. It never entered my head for a moment that there might be possibilities of failure; in fact I wondered that so simple a method had not been thought of long ago. Instead of taking greater precautions and trying out the method on a few colonies, or at most one yard, I determined to make a quick clean-up. The disease had been on the increase for several seasons regardless of shaking. My extracting supers having become infected, I was not certain that any colony was entirely free of disease; while it might not be showing up now, there was no telling when it would. It was evident that I must make a thorough clean-up on the disease or else it would make a clean-up on me.

It seemed reasonable that I could make this clean-up after brood rearing had ceased this fall by shaking my bees onto gas-treated combs instead of waiting until the honeyflow opened up next spring and shaking on foundation; in fact this method seemed to have everything in its favor.

First, in fall shaking there is no interruption of honey gathering with the consequent result of a lessened crop for that colony. No dividing of colony strength when most needed; when a week's delay may mean the loss of a super of honey.

There would be no brood to stack up and wait until hatched; no spilling of thin nectar to spread infection; no robbers or robbing to contend with; and the combs could be sterilized in the winter and the infected honey gotten rid of when it was too cold for bees to be nosing around. The shaken colonies would be fed sugar syrup to winter on, and next spring we would start out with a clean bill of health.

To this end I built a gas-tight room in one corner of my honey house, making it  $3\frac{1}{4}$  feet wide, 7 feet long, 10 feet high, and lining it inside with asphalt roofing. The laps were cemented good and fastened with lath and nails. This gave floor space for ten hive bodies or supers and allowed for stacking up twelve high with lath between each layer, and space above, below, and all

around for free circulation of gas through the supers. In one end, I built a small window for observing temperature and condensation inside. In the side I fitted two doors, a large one below for the main filling, and a small one 18 by 30 inches at the top for the finishing. I had trouble in making these doors gas tight, so I removed them and closed the openings, filling each with roofing, cementing and fastening down the edges with lath and nails.

On September 29 I filled the room with 120 hive bodies containing 1200 frames and closed it up tight. For the purpose of getting the formaldehyde gas into this room I had a special boiler built steam tight, into which I poured five gallons of 37 per cent formaldehyde and placed it over an oil stove. The boiler and room are connected with a piece of garden hose. It requires about twenty-four hours to boil off the five gallons of formaldehyde. The room was left closed for seven days and the combs subjected to the gas for this length of time. The temperature inside the gas room was around 60° F. After this the room was opened and the supers were taken outside and stacked up crosswise to air out. The gas was so strong at first that the building had to be left open for some little time to air out before we could work with the supers. The floor was wet with formaldehyde, showing the air had been thoroughly saturated.

On October 10, after the combs had been aired for four days in warm, dry and windy weather, and the formaldehyde odor not noticeable any longer, we loaded up a truckload of these gassed combs and started out on our crusade against the beekeeper's arch enemy, American foulbrood. My bees were in five outyards, which I will designate as Nos. 1 to 5. No. 1 consisted of forty-seven colonies, No. 2 of sixty, No. 3 of eighty-four, No. 4 of fifty-two, and No. 5 of sixty-five. As I did not have enough combs gassed yet to go all around, and as I wanted to get over as many colonies as possible, we only put five of these combs in each hive shaken and left space for five more to be put in later, as soon as the second lot could be run through the gassing room. In other words, the hives were only half filled with combs. And to make a thorough job of it, every colony was shaken regardless of whether or not any disease was in evidence.

The first day, yards Nos. 1 and 2 were shaken. It was very warm that day, being 90 in the shade, and extremely windy. To my surprise I found the bees drifting very badly notwithstanding the fact that they were shaken on their summer stands where they were all raised. We did not feed any syrup, as I figured on starving them for forty-eight hours in order to get them to use up all honey they might have in their honey sacs so there would be no danger of storing any infected honey in the newly sterilized combs just given them. Last season I shook several foulbrood colonies onto a clean set of combs and honey, and even though it was the last of November and cold, the queens started brood rearing and the disease in most cases was carried over. Previous to this I had shaken two colonies and had starved them two days before giving them honey, and had gotten rid of the disease, so that was the basis I went on this time.

So the first day we shook 107 colonies. The second day, October 11, we shook yard No. 3 in like manner. It was not quite so warm and the wind did not blow so hard this time, so the bees did not drift to any noticeable extent. On our way out to this last yard, No. 3, we stopped and examined the first yard shaken the day before. With the exception of having drifted, we found them all right in every respect. They appeared not to have suffered any ill effect after being on the gassed combs twenty-four hours. As we finished shaking yard No. 3, eighty-four colonies, it began to rain. And how it did rain! Four and one-fourth inches fell by morning, and also the temperature fell from 80 to 40 degrees.

This morning, October 12, we started out in the mud with sugar syrup to feed the 191 colonies shaken. Since the wet weather and the drop in temperature, I thought it best not to starve the last yard shaken for two days, so intended feeding them immediately after feeding the first two yards, which were by this time forty-eight hours without feed. We were a little fearful for the first two yards, since it had turned off cold and wet, fearing they might have chilled, being without feed so long, but had no fears for yard No. 3, which had just been shaken the day before. Reaching yard No. 1, we found them in far worse condition than our gravest

fears had anticipated. In front of the hives the ground was covered with dead bees; the entrances were clogged with dead bees, which apparently had been trying to get outside into the open air; and the bottom boards were covered with dead bees to a depth reaching up onto the brood frames. Some colonies were extinct, others had only a handful of bees left, while some few appeared not to have lost many bees. The strongest colonies suffered the worst. For example, colony No. 7 was extremely strong in bees; it appeared to be all right after spending the first twenty-four hours on these gassed combs, but now scarcely a living bee was left.

On we went to yard No. 2, which had spent forty-eight hours on these gassed combs without feed, the same as the first yard. Here we found identical conditions—dead bees everywhere. Sick at heart, we then went on to yard No. 3, shaken only the day before, having been on these gassed combs and without feed for but twenty-four hours. We felt confident that we would find this yard all right, as surely they could not have starved long enough to become weakened and chilled. The temperature going down to 40 only a few hours previous, this yard had not been demoralized by drifting. But to our utter dismay this yard was in the worst condition of the three. My strongest and best colonies absolutely extinct—colonies that had produced 250 pounds of extracted honey and the day before were boiling over with bees. This yard had been the strongest in bees and the freest from disease; it had been without feed only half as long as the first two yards, had been shaken on five gassed combs with half of the hive empty, same as the others, and yet it was the hardest hit of all.

Now, pray tell, what is the reason for this awful loss? Was it starving and chilling? No! Bees that had clustered outside their hives and gone through the rain and cold on the ground were reviving and crawling around as it warmed up later on, but no bees ever revived inside the hives, they stayed dead.

I am confident the bees were killed by formaldehyde fumes still remaining in the combs, even though there were but five to the hive, and I believe the dampness from the rain, which seemed to bring out and intensify the formaldehyde gas, was the direct cause of the loss. If the weather had remained dry, I believe the bees would have fanned out the gas without any loss to speak of. If that is not the case, then why were not the first two yards killed the first night on these combs same as the last yard? (Following up this theory,

it would appear that in the treatment of the combs formaldehyde gas is made more effective if the combs are damp or possibly even wet. Consequently, since this experience I have first steamed my combs in the gassing room before I gassed them.) I believe that since the bees in the first two yards had twenty-four hours of warm, dry weather, they fanned out part of this formaldehyde gas, so on the whole did not suffer as badly. At any rate the first three yards continued to dwindle and were united until out of forty-seven colonies in the first yard but ten remained to go into the cellar. Out of sixty colonies in the second yard but twelve remained to go into the cellar, and out of eighty-four colonies in the third yard but fourteen survived to go into the cellar. Many of these not much more than mating-box strength and they really should have been united still more.

In the last two yards, which were treated some two weeks later, the results were far different. Yard No. 4, consisting of fifty-two colonies, was shaken two weeks later on these same gassed combs, many of which the first bees had died on, but with few exceptions they all came through the ordeal without any loss. One exception was a strong colony which appeared all right for a day or two after shaking, then suddenly died like the first. This one colony had syrup in frames on both sides of the brood nest, and I hardly think they could have starved. In a few other instances I thought there was an excessive amount of dead bees out in front of the hives, which might have been from poisoning from the formaldehyde. But these last two yards were fed a little sugar syrup immediately after shaking and the next day were fed for winter. I didn't take any chances on starving them, as it was getting late and the weather liable to turn cold over night. I am, however, by this taking chances on the bees carrying diseased honey over and depositing it in the sterilized combs, for almost every colony immediately started brood rearing after being shaken. This yard was shaken when the temperature was about 65° F. and the bees all went back into their own hives without any drifting or robbing. This yard contained several diseased colonies which were weak, but after uniting I saved thirty-seven nice, strong colonies, which were put into the bee cellars on November 28.

The last yard, No. 5, consisting of sixty-five colonies, every one of which was full of foulbrood, should have been the one shaken first. Naturally, I did not expect much from this yard, consisting mainly of old field bees and weakened by disease. I suppose

that is the reason I put off shaking it until the last. But after uniting, I saved twenty-two fair-sized colonies and put them in the cellars.

No doubt you are wondering whether or not I had these combs tested by the Department of Agriculture for sterility. Yes, I did. The first lot of combs, those which the bees were shaken on, were all dry extracting combs, with the exception of one super of very bad foulbrood, which I ran through for a test. This super contained dead larvae in all stages of development, both capped and uncapped, a fair sample of which I sent to the Department of Entomology to be tested for sterility. Quoting from Mr. Hambleton's letter of October 17 reporting on above sample, No. 15017, he says: "We regret to report that sterilization is incomplete in about 30 per cent of the scales in capped cells. All open cells appear to be sterile." So, with five gallons of formaldehyde and seven days' gassing, all open cells appeared to be sterilized, and 70 per cent of the capped cells.

So I determined to try again and see if it were possible to sterilize without uncapping the sealed cells. This time I filled the gassing room with the brood comb from which the bees were shaken, but did not uncaps any sealed cells. On this lot I used double the quantity of formaldehyde (ten gallons) and left them in the room subject to the gas for four times the length of time (twenty-eight days) as I did the first lot. From this lot I took three fair samples, one from the bottom, one from the middle, and one from the top of the stack. Here is Mr. Hambleton's report under date of December 3 on the three tests:

"Your letter of November 17 is received, as well as the three samples of comb, Nos. 15070-1, 15071-2, and 15072-3, treated for American foulbrood with formaldehyde gas. The tests for sterility have just been completed, showing all of the scales in the open cells to be sterile in all of the samples, but showing sterilization to be still incomplete in the capped cells. In sample No. 1, from the bottom of the rack, 10 per cent of the scales from capped cells gave good growth and 10 per cent slight growth. In sample No. 2, from the center of the rack, 20 per cent of the scales from capped cells gave good growth. In sample No. 3, from the top of the rack, 20 per cent of the scales from capped cells gave good growth and 10 per cent gave slight growth."

(Greater sterilization shows at the bottom. This is where the gas entered the room.)

A further quotation from Mr. Hambleton's letter relative to the loss of bees is as follows: "Our ex-

perience with giving treated combs to bees before all of the formaldehyde had evaporated has been similar to yours. Combs without honey, after they were thoroughly dried, appeared not to injure the bees. On the other hand, when the bees were confined to treated combs that were wet with honey, practically all of the adult bees died within a week. Since the odor of formaldehyde was scarcely, if at all, noticeable in the hives, we assumed that the death of the bees was the result of poisoning by the formaldehyde absorbed by the honey. We have also found that bees in cages die quickly when given honey that has been exposed to formaldehyde gas. Honey absorbs a considerable quantity of formaldehyde when it is exposed to an atmosphere saturated with this gas. After the honey is removed from the sterilizing chamber it appears to hold tenaciously to the formaldehyde. Samples of honey which we treated in August and which have since remained exposed in shallow dishes to a depth of less than half an inch still have a strong taste of formaldehyde even though the odor cannot be noticed.

"If the extracting combs on which you shook your bees were wet with honey (some of them were), it is possible that they were poisoned by it. Bees are also quickly killed by a high concentration of formaldehyde gas in the air, but are apparently unaffected by small quantities."

So my experience has taught me some lessons which I hope will prove as valuable as they have been expensive.

First of all, to make haste slowly when trying something new, no matter how plausible it may sound. Next, that formaldehyde gas will kill bees as well as foulbrood. But that foulbrood can be completely sterilized with formaldehyde gas I think goes without question. However, to make certain and to also very greatly lessen the time of treatment, it is evident that every capped cell should be uncapped whether of brood or honey. This I shall do in the future and will continue the tests. I intend going over all combs that I have already gassed, and if any capped cells at all are found I will gas them again. Since in the first test all open cells were sterile in seven days with only five gallons of formaldehyde, while in the second tests, with twice the amount of gas and four times the length of time, the capped cells showed but 10 to 20 per cent better results, it certainly does not pay to taken chances on capped cells.

If necessary to give gassed combs wet with honey to the bees soon after the treatment, it is evident that they

should be thoroughly washed by soaking in water and then extracting.

And as for trying to sterilize foulbrood honey or feed such gassed honey to bees, I would lay off of that altogether.

I still am firmly convinced that in the fall, after the honeyflow has ceased for the year, and after brood rearing is practically over with, is the best time to make a general clean-up. I believe that, if the colony is not too badly infected, it is better to let them make what honey they can. Of course if they are rotten with the disease in the spring, they had better be shaken or gotten rid of, because in that event they would probably die before fall and be a source of infection to other colonies.

Nebraska.

### Transferring Bees Without Losing Brood

On page 306 of the June issue of the American Bee Journal, Mr. John Gray gives a method of transferring bees without losing any of the brood.

He says that, after three weeks, the young bees are all hatched and then all one needs to do is replace the queen excluder (which has been placed between the new hive and the old) with a board in which a small auger hole has been bored. The bees will go up into this hive and carry down the honey, much the same as if they were robbing. He also says they will not store honey in the hive above this board.

A few years ago we kept bees in old box-hives, and I have more than once taken an auger and bored a small hole in the top of the box-hive and placed a small box on top, probably large enough to hold ten pounds of honey, and the bees would go up through this hole and fill these boxes with honey. If they would go up and carry honey up and build combs above, why wouldn't they, in this other case, go to the trouble of carrying it down? Has anyone else tried the method suggested?

I remember I got one box of honey in this manner that was of a very blue color and of most excellent flavor. Have never seen any more of it and have often wondered from what flowers it was obtained. However, I do not want any more box-hives, as they are most certainly a nuisance.

Earl E. Manges,  
Pennsylvania.

(The bees will bring the honey down, if there is room below; but if there was no room below, as in the case you report, they would add to the amount located above. It is only a matter of varying circumstances. When we had to transfer bees, and we transferred hundreds of box-hives

and "gums," we always did it at the time of fruit bloom, and transferred all the worker brood, combs and all, into frames, saving every bit of good combs. Now, our modern beekeeper does not want to bother with the transfer of combs, since he uses comb foundation. It is the modern tendency to take short cuts, even if one wastes a little more.—Editor.)

### Honey That Will Not Candy

W. Schulz, of Landsberg, Brandenburg, Germany, describes an interesting case of honey that would not candy (*Neue Bienenzeitung*, August). The honey, which was gathered in less than three weeks' time, in July, 1927, was almost water-white, of good flavor and aroma, but very "thin" and of poor density. A sample pot with paper cover was kept for several months in the warm kitchen, then in a cold room under the roof, but had only just begun to show signs of clouding. The writer, who has kept bees some thirty years, has never before produced a honey that behaved so. (Possibly the excessive amount of water which the honey appears to have contained was responsible.)

The same writer deals with that "hardy annual," the sugar-honey scandal. He points out that if sugar is fed in quantity to bees when there is a flow, they turn most of it into brood, while if it is fed to them during a dearth, robbing starts, the colonies are weakened by fighting and by the strain of inverting the syrup, and there is, in short, no money in it for the beekeeper, save in very exceptional cases.

A. D. B.

### Bee Louse Rides Out of Cell with Virgin

The *Leipziger Bienen-Zeitung* (Germany, November) contains an interesting bee louse story. A beekeeper was watching a young queen nibbling her way out of her cell. He does not appear to have taken his eyes off the cell for an instant, so that the explanation one feels inclined to suggest—faulty observation—seems to be excluded. What was his astonishment, as she walked off along the comb, to see a bee louse perched upon her back! It cannot, in his opinion, have entered the cell by the slit made by the queen as she began biting her way out; and he inclines to the view that the egg of the louse must have been laid in the queen-cell. Professor Zander, while of opinion that the way in which the queen came by the louse remains doubtful, does not deny the possibility that the louse really was in the cell before the queen emerged.

A. D. B.

## THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

### CAN A YOUNG MAN MAKE GOOD IN BEEKEEPING?

I have been thinking seriously of entering commercial beekeeping as a future business, but I hesitate on doing so for these reasons:

Is it a safe and profitable venture for a young man to undertake?

Will the honey industry ever rank equal with our other progressive enterprises?

I have kept bees for six years by modern methods and now own twenty-five colonies in Modified Dadant hives. I produce comb and extracted honey.

I also own several good bee books and take two popular bee journals, but none of them seem to encourage one much on specializing in bees or honey. They do, however, favor it as a sideline or hobby.

Now I like apiculture and think it a very interesting occupation; as a sideline it shows a fair profit. However I don't see much attention directed to beekeeping, and most young men take up more popular pursuits to make a living by.

It is here where I lose confidence in it, and I am just wondering if there really is much money in it for a person to make a comfortable living at. I have a chance to take up a good trade, too, if beekeeping after careful investigation, proves the least promising. Bees would perhaps be kept as a sideline hobby then.

Of course, I realize that to be successful in any trade depends on the man, etc., and that he will have certain obstacles to overcome as he goes through life.

If I go into commercial honey production I intend to operate 500 or 600 colonies in large insulated hives, if possible in not more than five outyards. I would have a large, modern honey house or extracting plant, equipped with electricity, hot and cold water system, etc.—that is, put it up to date like other manufacturing and packing plants. Extracted honey only would be produced and I would intend to ship it all. A sweet clover location would be preferred in Minnesota or South Dakota.

Here is what I have a good mind to do this coming summer: get a job as helper with some efficient bee man and see what it's like on a large scale. Do you think this would be a good plan?

IOWA.

Answer.—It is impossible to answer your questions by yes or no, for the reason that much of the success in beekeeping depends upon the ability of the man who undertakes beekeeping.

From the neatness of your letter, I judge that you are a very careful man. Therefore I believe you will succeed in beekeeping, if you put your best efforts at it. Working for a large producer would be good.

I don't think the honey industry will ever equal some of our other industries, because this business in its essence is smaller than most other industries. But there is good opportunity in it, especially if you try it in South or North Dakota, in the sweet clover regions. The only objection I have to those states for beekeeping is the length and cold of winter.

If you do not expect too much, I am satisfied that you can make a success of beekeeping in those regions. If you wish, you might add school teaching during the winter months, after the bees are put into winter quarters.

### PAPER CARTONS FOR WINTER PACKING

I have secured a number of air-cell paper cartons in which merchants receive certain merchandise. In one of these I placed a hive, allowing the alighting board to extend through the front by cutting a hole in paper box. I run a wood channel with an opening of  $\frac{3}{4} \times 3$  inches from the hive opening to the outside; this allows the bees to come out for flight and re-enter. By making a cut in the top of the four sides of lower box

I can put another box of the same size down over the lower part, making an almost airtight enclosure for the hive.

This looks good to me, but I should like your opinion on it, as there may be some faults which I do not see.

2. I have discovered a few swarms of bees in a park; some enter the trunk of trees less than fifteen feet from the ground and others enter branches far up in the trees. Not being allowed to cut these trees, the question is, how can I get them? They are very strong and pure Italians. I caught a number of worker bees and was surprised at the size of them, being very much larger than any I have ever seen. Can you suggest some method by which I can get them out of the trees into hives without cutting the trees, and when to do it?

3. Can I induce issuing swarms to enter boxes, by putting bait starters in, and placing these boxes about in the woods? Should they be set on the ground or among branches of trees, close to the tree where the parent colony is?

PENNSYLVANIA.

Answer.—1. I can see nothing wrong with your method of packing, since you do not confine the bees, but leave an entrance through which they may take flight on warm days. It is certainly better than no protection.

2. The bees in trees may be driven out with smoke, by cutting a second opening so as to have one at top and one at bottom. Smoking them at the bottom will compel them to go out at the top and they may then be secured just as any natural swarm. It would be still better if you could get permission to cut an opening large enough to remove the brood and combs. This would not damage the trees much and would secure all the bees.

3. Issuing swarms are often baited to hives by placing the hives, with combs, in conspicuous places, shortly before the time of swarming. You must remember that the moths will readily occupy combs in which there are no bees; therefore these combs cannot be left long in such open situation. But even empty hives with comb foundation starters will often be occupied by swarms, if in a conspicuous position. William Stolley, of Grand Island, Nebraska, who used to be one of our leading beekeepers, kept several empty hives on top of his apiary shed, ready for swarms, and said he often secured swarms in that way, even stray swarms from other apiaries. But you must not depend on this as a sure thing. It is only a comparatively accidental occurrence.

### CLEANING UP FOULBROOD IN WINTER

I have forty-eight fair swarms left, all infected, as I have been too busy this last bee year to clean them up. I still have 1200 pounds of honey to extract, which is almost impossible to extract without heating. I was just wondering if it is best to melt honey, wax, all, and to melt all my empty combs which are in good shape?

I have about 110 ten-frames of Hoffman size and about 30 eight-frame bodies. I have about 75 complete hives, mostly with steel covers. Would you melt all combs and start bees on new comb? Would the wax melted buy the necessary new comb? Do you believe in disinfecting combs as Jay Smith prefers, or to be safe and not spend much? Is it best to melt all comb next spring, as I will try and winter bees in a concrete cave? Could I sell all my bee supplies for a reasonable price, or is it against the law to ship them? Should I ask the State Apriarist to help me next spring? I have been studying quite a bit on bees the last five years.

IOWA.

Answer.—As you are situated, I would recommend that you melt all the combs that have no bees on them and render them into wax. Render also the honey and keep it boiling for about a half hour. This will destroy the germs of the foulbrood.

When spring comes I would recommend that you write to the State Inspector and ask him to come and examine your bees and advise you. You cannot sell bees when they have disease, for it is against the law; neither can you sell any of your supplies.

If you have rendered the beeswax, you can exchange it for comb foundation. This will give you a good start and you can avoid further infection by transferring the bees and singeing all your hives as fast as you empty them.

### CAUSE OF SOUR HONEY

What information can you give me as to why extracted honey should sour after it is put into good, clean pails and glass jars? Where is the proper place to store honey to keep it from souring? It also seems to me that there should be some way this sour taste could be removed from honey without destroying the honey flavor.

IOWA.

Answer.—If extracted honey is well ripened, it will not sour unless it is kept in a moist place. The proper place to keep honey is in a dry spot.

Honey is often unripe, even when sealed by the bees, if the season has been very wet. When it comes in very fast, the bees are apt to produce wax and seal it before it is ripe. Then it will sometimes burst the cappings because of fermenting.

If honey is too thin when extracted, the only way to mature it quickly is to heat it. But this must be done very carefully, for if it is heated higher than 140 degrees it is apt to spoil its taste. It evaporates some of the essential oils that it contains.

You can evaporate some of the sour flavor and all the air bubbles, by heating it. But honey which has begun to sour will never be as good as well ripened honey. So you will see that it is very important to have it well ripened before it is put up for retail.

Some people, after extracting the honey, put it in large open tanks in a hot place, in an attic or some such warm, dry place. But heating lightly and slowly is the best way to evaporate it fast.

### INTRODUCING QUEENS WITH SMOKE

The last week in October I received two queenbees by mail. They were fine ones, too. I had two colonies that had old queens. I took the old ones out and made direct introduction, or nearly so. I gave them a good dose of tobacco smoke. I also gave the queens in the cage one puff of tobacco smoke and put the cage on the frames for the bees to eat out the candy. They did so. I have watched them very closely, but have not seen any yellow bees yet. I introduced yellow queens among black bees. I fear I went too fast. I did this all the same evening. Please give your opinion about it. I am a subscriber to the American Bee Journal. Did I go too fast, or is it a good way to introduce queens? Do you think the bees balled the queens, or do you think the young bees will show up later?

KENTUCKY.

Answer.—The smoke method of queen introduction is used and recommended by some people, but we never succeeded well with it. We prefer to introduce the queens by leaving them in the cage for forty-eight hours between two combs of brood and releasing them by letting the bees eat through the candy of the cage. We rarely lose a queen in that way.

If there is a honey crop, you may be able to introduce queens almost any way, because the bees are very peaceable at such times.

In order to know whether your queens

have been accepted, the only thing to do is to examine the combs for eggs just as soon as the bees begin to breed in the spring. If the queens were killed, it is probable that they have not been able to rear young queens or to get them fertilized. In that case there would be either no brood at all in the hives or drone brood if the queens had failed to mate. Then you would need to introduce new queens again.

#### PREPARING WEAK COLONY FOR WINTER

The latter part of last month I purchased three hives of bees, my first real venture in the bee industry. Two of the hives are heavy, will weigh probably 100 or 115 pounds. They are ten-frame hives. The third one is light, real light in comparison to the other two. The man of whom I bought them said it was a late swarm, and as these were all that he had and I got them for a reasonable price I could not object to the light hive. A neighbor said they would have to be fed, but there are thin pieces of board fitted tightly over the frames and cemented fast to them, and every attempt to move them causes the bees to come out. As the weather is cold and damp, they invariably perish before getting back.

#### NEW YORK.

Answer.—If you want to feed the weak colony from the surplus of the others, which can probably be done, you should either wait for a warm day or use smoke to keep the bees indoors. You should own a bee smoker anyhow. By smoking at the entrance you will prevent the bees from escaping, if you don't overdo it. Remove the slate and take out such combs as you wish to use.

If you want to feed the light hive with sugar, it is best to use candy, for it is now too cold to feed with sugar syrup. To make candy for bee feed, add water to sugar and boil slowly till the water is evaporated. Stir constantly so that it will not burn. To know when it is done, dip your finger first into cold water, then into the syrup. If what adheres is brittle to the teeth it is boiled enough. Any of your young people who know how to make "fudge" can make this candy for you.

Better buy a bee book and read it. It will be worth while and will help you in many instances.

#### WHIPPED HONEY

Can you tell me what whipped honey is? If so, how is it made? Several of my customers have inquired about it. They tell me it looks white, is guaranteed not to granulate, and selling at 60 cents per pound. Any information on the subject will be appreciated.

#### MICHIGAN.

Answer.—Honey may be whipped, just as they whip eggs or cream, and it will become flaky and will of course be whiter while in that condition because of the air in it. But this will not prevent it from granulating, if it becomes liquid again. Neither will dark honey be rendered white by the process, although its color will be improved.

In France, they improve honey that is not granulating regularly by whipping it, and it helps it to granulate more uniformly.

#### WILL OUTDOOR COLONY WINTER?

Inclosed please find clipping from St. Louis Post-Dispatch. The picture speaks for itself. The question I would like to ask is: Will they winter in this condition? What is your experience?

#### ST. LOUIS.

Answer.—The bees have built their nest in a tangle of wistaria vines at Shaw's Garden, St. Louis. They look as if they had a pretty good size nest, but I doubt whether they can winter there. However, I have never seen anything like this in so exposed a situation. It will surely be too cold for them, even if they are not disturbed. I would be glad to hear how they fare, towards spring.

#### PLANS FOR AN OBSERVATORY HIVE

I wish to secure detailed plans for the construction of 1½-story observation hive. Where can I secure such plans? IOWA.

Answer.—You will find mention and a cut of observation hive, paragraphs 374 to 377 of our book, "The Honeybee." These hives are usually made in a story-and-a-half size. You will also find a description of an observation hive of the same pattern in the A B C and X Y Z of Bee Culture, pages 642-6.

Observation hives are kept for sale by most of the dealers in supplies. Our own people keep them.

If you want a full two-story observation hive, all you need to do is to go to a carpenter with a frame such as you wish to use in one and show him the cut in our book. From this there will be no trouble in getting a hive properly made.

You may also find a cut and an explanation of observing hives in my little book, "First Lessons in Beekeeping," paragraph 212.

#### MATED QUEEN WITH INJURED WINGS

Please explain how this queen mated, having no wings. She was hatched in June and was the mother of a hive of hybrid bees. I am sure she was the only queen in the hive. We are sending her as she was found on the combs.

#### MISSOURI.

Answer.—There are several ways of explaining the puzzle. The most probable is that she was born with wings, was mated at five or six days of age, in the usual way, and lost her wings in a fight with another queen or by the bees balling her after her mating. Or perhaps she had only laid drone eggs, while the worker brood was from another queen, which may have been killed by her in a fight.

Of course, one might decide that she was mated in the hive, without having to take a flight. But as this has never happened, in spite of the fact that many people have tried it with great expectations, we will not suggest such a thing.

#### Robbing in Double Shifts-- Not Uncommon

The veteran French beekeeper, M. Jungfleisch, tells a good story against himself in the November *Apiculteur*. Round about 1900 he had made some bee escapes to a pattern of his own, which, like the Porter escape, were placed between the supers and the broodnest. As it was not possible, with the clearer in this position, to see whether it was functioning properly, he tried a plan suggested at the time by correspondents of the paper, and mounted four escapes on the edges of his clearing board, in such a manner that the bees could escape directly into the open air. At first all seemed to go well; but, after a time, he noticed bees sitting around the escapes and apparently hindering the exit of those still inside the supers. He supposed that an attempt at robbing was in progress, and chased the bees away with smoke more than once. However, as there continued to be a group of five or six bees at each escape, he looked more closely, and then discovered that the bees inside the super were bringing

the honey to their friends outside, who received it from the outstretched proboscis of the inside bees. "For more than an hour I looked on at the perfectly organized removal of the contents of my super, and I had to set a bound to my admiration in order not to be deprived of it entirely. With a strong puff of smoke I took away the board with external exits to the escapes and replaced it by one with escapes into the hive; and I was able a little later to take off my super, more than half empty."

He asks: "Instinct or intelligence?" If, as is probable, the answer should be, "Instinct"; yet the performance was certainly a wonderful instance of the adaptability of bees—in this case, presumably of the store bees (who ordinarily wait for honey to come to them on the alighting board)—to a situation which can scarcely ever have troubled their ancestresses in bee tree days.

A. D. B.

#### A New Use for the Old Long Notion Hive

There are one or more of these old, long hives or other odd sized hives in almost every apiary, or at least there have been in the ones I have bought. They are generally in disuse, but occasionally one will find them with bees in them, not because the owner has found them a success, but generally because he has no other use for them and dislikes the thought of throwing them away.

If you are one of these owners, and are at all interested in poultry, as most small beekeepers are, you will find that with the use of a few common tools and very little trouble you can turn almost any large beehive into an ideal chicken coop.

If the hive has a glass in the rear, all that is necessary is to remove it, and the wooden shutter becomes a door that can be hinged either from above or below as the construction of the hive requires. Two pieces of small leather strap about four inches long will make the best kind of hinges, and any small strip of wood can be nailed over the old bee entrance, which is now in the rear. If there is no glass in the hive, the original entrance must be sawed out large enough for the chickens.

Next, cut out the ventilator in the cover above the door, covering the hole on the inside with wire cloth and hinging the piece cut out from above for a shutter, and the poultry coop is complete.

All that is required to clean the coop is to remove the cover and reverse the form hive body. The ventilator should always be kept above the door.

T. T. Gorsuch, Maryland.


**AMERICAN HONEY INSTITUTE**  
 FOUND 1928  
**BEE INDUSTRIES ASSOCIATION OF AMERICA**  
 CHAMBER OF COMMERCE BUILDING  
 INDIANAPOLIS  
 DR. H. E. BARNARD, PRESIDENT

#### Blatant Billboards

Our highways are often unattractive because of the advertising signboards which hide natural beauty, obscure the road ahead and often by their blatant appeal for interest distract the attention of the motorist.

The usual roadside advertisement is nothing more than a reiteration of the story which is told in the daily press or spread on magazine pages. There is, however, one form of advertising which very properly belongs by the roadside, and that is the bulletin board of the beekeeper, who uses his wayside stand to attract the interest of passersby in exactly the same way the shopkeeper in town utilizes his store windows. Legislation is being enacted to regulate wayside advertising, and the National Government will undoubtedly be called upon to eliminate defacing billboards by suitable legislation. Beekeepers and farmers who have honey, fruit, eggs, and garden produce to sell should be alert to prevent the drafting of legislation which, while designed for most desirable ends, might, if improperly drafted and interpreted, operate to prevent the roadside sale of their product.

#### And Now a Sugar Institute

It is interesting, if not significant, that the latest organization to be formed to promote the use of special foods is the Sugar Institute. No less a writer than Arthur Brisbane, in his column in the New York American, says: "This country, once the great sugar conserving nation of the world, now eats less sugar than it needs." And Earl D. Babst, head of the American Sugar Refining Company, hastens to add that Australia uses eighteen pounds more per capita per year than the United States, and New Zealand fifteen pounds more. His arguments for increased sugar consumption should be of great interest to beekeepers, for if they are sound and logical in respect to sugar they are at least twice as weighty when applied to honey.

"Sugar will not make you fat," he says. "On the contrary it will supply heat and burn up waste tissue." Of course, sugar is a cheap source of energy like the starches and all carbohydrates. The efforts of the Sugar

Institute, financed as it is by all the wealth of the great sugar refineries, will no doubt be reflected into a larger use of sugar. But no good nutritional authorities will support the plea that we are not eating enough sugar. On the contrary, they know that the great increase in sugar consumption during the last twenty-five years has thrown our food intake seriously out of balance and reduced the consumption of foods just as essential to health and nutrition as sugar.

Less honey is eaten now than formerly. Once it was the only sweet; now, in spite of its delicate flavor, high food values, and perfect blend, of easily digested sugars, it is the occasional spread, and less than two pounds per capita is eaten yearly, while more than a hundred pounds of sugar is consumed. So the work of the Sugar Institute will not receive the applause of beekeepers except as it may call to notice the high value of all sugars as energy foods and so pave the way to a realization of the age-old truth, that honey is the ideal sweet for growing children, for those whose metabolism is disturbed by disease, and by men and women of every occupation who need large stores of energy and who love the fragrance and flavor of fine honey.

#### Honey Institute Directors Meet

The annual meeting of the Board of Directors of American Honey Institute will be held on February 6 at Sioux City, Iowa. All arrangements for this first annual meeting were made at a special Board meeting held at Chicago, December 20, which was attended by Lewis Parks, chairman of the Board; L. C. Dadant, secretary-treasurer; H. H. Root, C. O. Yost, F. W. Muth, and President H. E. Barnard.

It was decided to hold the annual meeting in connection with the coming convention of the American Honey Producers' League, but a day in advance, in order that it might develop plans for cooperating with the League in its publicity and educational efforts.

The work of the Institute during its first nine months was discussed in detail by President Barnard. Special notice was taken of the wide-

spread interest the work of the Institute was arousing among teachers of home economics, editors, and writers on food topics, chemists and officials in State and Federal food departments, the market commissioners of many states and other food industries which appreciate the value of honey either as an important ingredient in their own food or as the ideal sweetening agent to be used with them.

Dr. Barnard reported his arrangement with Bakers' Helper, a leading journal of the baking industry, by which a series of four articles would be printed in the Helper and then issued in pamphlet form for the use of bakers and honey dealers serving the bakery trade. The series will include special articles and recipes for honey breads, soft cakes made with honey, honey cookies, and hard pieces and special bakery products containing honey. It was the opinion of the Board that an edition of 20,000 pamphlets would be needed to supply the demand for this helpful manual.

The need for sound research work on honey, with special reference to its use in the food industries was considered and Dr. Barnard was instructed to use every effort to secure the appropriation of an adequate budget to finance the necessary work, which, if funds are available, will be carried on by the scientific bureaus of the United States Department of Agriculture, under the direction of Prof. James I. Hambleton. The hearty interest taken in the Institute by state beekeepers' associations, which are extending far more invitations to Dr. Barnard to explain the purpose and work of the Institute at their conventions than can be accepted, was a matter of gratification to the Board.

In view of the legislative sessions which will be held in most of the states during the winter, the assistance of the Institute was offered beekeepers who may find it necessary to oppose unwise legislation or who may wish help in securing the passage of desirable measures.

#### Increasing Honey Interest

Printers' Ink is one of the outstanding magazines in the field of advertising. Its analyses of merchandising methods are accurate and important. In a recent issue it says "New advertisers are created in interesting ways," and refers to the splendid advertising of honey as the ideal sweet to eat with Kellogg's Cornflakes.

This story is told by the editor as follows:

"Several breakfast food and cereal advertisers have mentioned in recent copy that the use of honey would improve the tastefulness of their

products. As a result of this gratuitous advertising, a honey packer has found his sales increasing at a surprising rate. At first he did not know how to account for the jump in sales, but when he saw the breakfast food advertising he came to the conclusion that this was the explanation. Now he is considering an advertising campaign of his own, and before long he will probably be found using paid space in the same publications employed by the breakfast food advertisers.

#### Christmas Gifts in 1929

Christmas is over. Some of the gifts are in service, many are broken, and a few have been exchanged. The pile of Christmas cards carrying greetings and best wishes for the new year is stored away until resurrection day, which for most cards will be the week before next Christmas. But already some far-seeing people are thinking of Christmas greetings for the years ahead in better forms than the conventional cards, which, although attractive for the moment, are always trivial and, after the first pleasure of reading, useless.

Nothing makes a better Christmas greeting than an attractive food package. A lady in Wisconsin used plum puddings for her 1928 Christmas cards, and her friends who received them found them full of the joy and spirit of the holiday season. Next year she proposes to send an even sweeter greeting to her friends, and already she is looking for attractive packages of fragrant honey. Every beekeeper will agree with her friends that she has found a better method of sending Christmas greetings than the standardized card, and the Institute will endeavor in the months ahead to broadcast her excellent idea.

#### Colds, Vitamins, and Honey

(Continued from page 69)

teriologist, or something, one of my first and pleasantest jobs would be to prove that HONEY contains so many millions more sunshine vitamins than any other food that there is simply no comparison; then get our splendid food and health specialists like our good professor to talking HONEY, and we beekeepers would "have the world by the tail."

Therefore, if winter colds are for the most part caused by faulty elimination and the lack of sunshine vitamins—and there can be no doubt of it,—how easy to continue our cleanly habits of bathing, increase our green vegetable and fruit diet, use plenty of good milk, cream and butter, and eat honey in every possible way dur-

ing the winter months. I know it works. We do it in our family. You can in yours. As November and December come on, our proportion of vegetable salads and uncooked fruits is increased. Oranges, apples, grapefruit and lemonade are eaten freely. Our sour kraut jar becomes a family shrine. If any "sniffles" appear, their possessor is put promptly to bed, given a big drink of hot lemonade sweetened to taste with honey. He is allowed no food except the juice of oranges, grapefruit, or lemons, with honey sweetening if he wishes, or he goes on a "water fast," which in a few hours so completely discourages the "sniffles" that they straightway disappear. Personally, I believe a complete fast is "good for anything that ails you"; then a day or two of citrus juices with honey as a "comeback." These methods, together with the above mentioned foods during the winter, have made our family almost immune to colds.

Of course, John and I preach honey to anyone that will listen; but we have some honey customers who cannot be converted to the above ideal and practical method. Since I know that honey with its sunshine vitamins is bound to help them, but they really must have "something to take" for their colds, I have recommended to them the following old-fashioned home remedies, handed down to me by my grandmother, as most excellent:

#### Honey Posset

Let simmer slowly for half an hour one pint liquid honey, one teaspoon powdered white ginger, one-fourth

pound fresh butter. Do not let boil. Then add juice of two lemons, cover and let simmer five minutes longer. Taken warm, brings relief to colds and cough almost immediately. The remainder should be kept on hand for continued use.

#### Honey Cough Syrup

To one pint of liquid honey add the juice of one lemon and one tablespoon spoon of olive oil. Shake briskly. One teaspoonful when cough is troublesome.

#### Aunt Becky's Cough Syrup

Boil in three quarts of water one-half pound of dry hoarhound, one pod red pepper, four tablespoons ginger. Strain. Add one pound of liquid honey. Boil slowly, stirring often until reduced to one quart of syrup. When cool, bottle. Dose, one to two teaspoons when cough bothers.

#### Mummy's Cough Drops

This is really a candy, but we make it often. As Bobby says, "It's fun to play cough so Mummy will make it." Our children are very fond of it, and it always vanishes as by magic. Try it. Get five cents' worth of hoarhound at your druggist's. To it add three cups of water and boil down to one cup liquid. Strain through fine cloth. To strained liquid add three cups of light liquid honey; boil, stirring frequently until the hard ball stage arrives, testing as for taffy in cold water. Turn into buttered pan, cool and mark into squares; or cook only until the "thread stage," pour into buttered pan, cool, and pull as for taffy. I know your Bobbies, and your Johns, too, will like it as mine do.

## MEETINGS AND EVENTS

Current association meetings and organization notices are published in this department each month. Secretaries and other officers of organizations who wish publicity here should make sure that notices are sent in before the fifteenth of the month preceding publication. Frequently notices are received too late for use and consequently do not appear at all.

#### League Convention, Martin Hotel, Sioux City, Iowa, Feb. 7-9.

The educational program for the afternoon of February 7 as arranged by the Iowa State Beekeepers' Association is as follows:

"Mistakes in Honey Production," Dr. R. A. Morgan, Vermillion, S. D.

"Nectar to Honey," Prof. O. W. Park, Ames, Iowa.

"Inspection in North Dakota," Prof. J. A. Munro, Fargo, N. D.

"Inspection Campaigns," Dr. R. L. Parker, Manhattan, Kansas.

The subject of Dr. Barnard's address, to which the general public is invited, is "Honey for the Consumer." This address will be held in the Central High School audi-

torium in order to make room for the large crowd expected. Wide publicity will be given to this particular address by representatives of the press who will be present. Please boost this address in order that all possible persons may be interested in attending.

The honey marketing conference on February 8 will undoubtedly be the high-light of the convention. Upon this program will appear such speakers as Mr. A. W. B. Kjosness, general manager of the Mountain States Honey Producers' Association; Mr. A. G. Halstead, general manager of the Ontario Honey Producers' Association; Mr. Weir, secretary-treasurer of the Ontario Honey Producers'

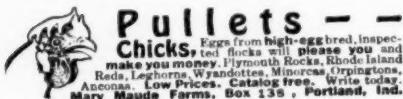
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Association; Mr. J. I. Hambleton, apiculturist, Bureau of Entomology; Dr. R. L. Purdon, Bureau of Domestic and Foreign Commerce; Mr. Clay of the U. S. Bureau of Agricultural Economics; Mr. Hamilton, of Hamilton, Wallace & Bryant, Los Angeles; Mr. Amelios Hijos, of Cuba; Miss Mary I. Barber, of the Kellogg Company; Mr. George S. Demuth, editor, Gleanings in Bee Culture; Mr. James Gwin, honey marketing specialist, Wisconsin Department of Markets; Mr. Stevens, claims department of the American Railway Express Company; Mr. Boles, superintendent of the American Railway Express Company; Mr. W. J. Nolan, associate apiculturist, U. S. Bureau of Entomology, and Mr. Frank Rauchfuss, manager, Colorado Honey Producers' Association.

It is expected that representatives from all the important honey marketing and distribution agencies of the United States and possibly from foreign lands will be represented at this conference. If the program is not completed during the afternoon of February 8, it will be continued the morning of February 9.

An exceedingly important meeting of the apiary inspectors of America will be held the evening of February 8 under the direction of Dr. R. L. Parker, state apiarist of Kansas. There will be a general discussion by the state apiary inspection officials present. The present indications are that about 60 per cent of the states will be represented at this conference. It is, therefore, anticipated that a subsidiary organization of the League primarily for apiary inspectors will be formed.

The annual banquet will be held the evening of February 9. This is always the big social feature of the League convention, and everyone should plan to be in attendance. The League meetings will undoubtedly continue right up until banquet time, when we can all draw a sigh of relief and get into the spirit of making merry.

Probably on the morning of February 9 Mr. L. C. Dadant, secretary-treasurer of the American Honey Institute, will give one of the most important addresses of the entire convention. This address will be entitled, "The Relation of the Bee Industries Association of America and the American Honey Institute to Beekeepers at Large."

### Don't Forget!

Don't forget the following points: First, when you purchase your ticket make certain to obtain a receipt, which will be validated at League headquarters at Sioux City; second, to send a representative of your local association to represent you at the

convention; third, to have any proxies which you hold in written form; fourth, to be in Sioux City by the hour the convention opens, as exceedingly important business affecting the whole industry will be conducted during the first morning session.

C. L. Corkins.

### Utah Bee Men Meet

By Glen Perrins

Utah State Beekeepers' Association held its annual convention at the Hotel Bigelow, Ogden, January 8 and 9. This was the first time that this organization had met in Ogden, previous meetings having been held in Salt Lake. The meeting was well attended.

The association decided to become identified with the American Honey Producers' League, and the president of the organization, J. C. Henager, of Salt Lake, was authorized to select a member of the association to attend the national convention in Sioux City, Iowa, this year.

The Committee on laws, consisting of D. H. Hillman, Wilford Belliston, W. E. Miller, D. J. Bagley, Oran Baird, M. S. Stone, Thomas Chantry and A. W. Anderson, presented its report, which was adopted, recommending that steps be taken to have enacted a law "to prohibit the shipment into the State of Utah of honeybees in hives, including combs, and all other apiary equipment, except shipment of bees in combless packages."

Dan H. Hillman, state apiarist, was recommended to Governor Dern for reappointment as bee inspector.

It was also resolved at the meeting to ask for representation on the State Board of Agriculture.

Among the principal speakers were Dr. A. P. Sturtevant, of the United States Intermountain Bee Culture Field Station, Laramie, Wyoming; A. W. B. Kjosness, general manager of the Mountain States Honey Producers' Association, Boise, Idaho; D. H. Hillman, state inspector, Salt Lake, who made his annual report. J. C. Henager, of Salt Lake, presided.

Approximately 125 persons were here, from Idaho, Montana, Nevada, Wyoming, and Utah. Livestock men were here for the annual stock show in Ogden at the same time. It was a gay crowd at the Hotel Bigelow.

Dr. Sturtevant gave an interesting scientific lecture on bee diseases and remedies. R. T. Rhee, of North Ogden, also discussed bee diseases, dealing almost entirely with American foulbrood.

There was a lengthy discussion at the evening session on "Bee Laws and Migratory Bees." Importation of bees from California during the year showed a marked increase over

the preceding year, according to Mr. Hillman in his talk. The total was thirty carloads.

Mr. Hillman reported that \$3,382 had been expended during 1928 on inspection of bees.

"There's real romance in the bee industry," said Mr. Kjosness, "when one stops to think that the honey produced by the bees of Utah, Idaho and the West actually finds its way into Hamburg, London, Bremen, Liverpool, Hull, Genoa, Hawaii, and other distant points. There is a great future for the beekeepers, and with the cooperative groups forming and growing, things look very bright for bee men in 1929," he concluded.

At the close of the Utah Beekeepers' Association convention the officers were reelected. They are: J. C. Henager, Salt Lake, president; F. B. Terriberry, Midway, secretary-treasurer; D. H. Hillman, Salt Lake, vice-president; R. T. Rhees, North Ogden, and Wilford Belliston, Nephi, directors.

#### Ohio State Beekeepers' Association

The annual meeting of the Ohio State Beekeepers' Association will be held during Farmers' Week at Ohio State University, Columbus. There are many advantages in holding the association meeting at this time. By the cooperation of the program committee of the association with the extension service, the range in beekeeping subjects and problems included in the Farmers' Week program can be made more complete than it could be otherwise.

Mr. James B. Gray, Sylvania, Ohio, who is president of the association, will open the session.

Dr. E. F. Phillips, professor of apiculture at Cornell University, will take a prominent part in the program.

Mr. Frank C. Pellett, Hamilton, Illinois, field editor for the American Bee Journal, and who has written several beekeeping books, will be one of the new speakers on the Farmers' Week program.

Mr. H. H. Root, manager of the A. I. Root Company, Medina, Ohio, will for the first time in many years attend the Farmers' Week meetings. Mr. Root has kindly consented to act as toastmaster at the beekeepers' banquet on the evening of February 7.

Mr. Emerson Long, St. Paris, Ohio, who has about five hundred or six hundred colonies, is one of the more recent and most successful commercial beekeepers in the state. Mr. Long has promised to talk about his methods of honey production.

Dr. Ernest Kohn, of Grover Hill, Ohio, another commercial honey pro-

(Continued on page 94)



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## Crop and Market Report

Compiled by M. G. Dadant

For our February crop and market report, we asked reporters to answer the following questions:

1. How much honey left on hand?
2. How is the demand?
3. Are beekeepers encouraged for the 1929 production year?
4. Is an increase in bees for 1929 probable?

### HONEY ON HAND

One or two reporters in Maine state that there is considerable honey left on hand, but this seems to be the only one of the New England states which has more than 5 or 10 per cent of the honey, and this is cleaning up rapidly.

In New York perhaps 10 to 15 per cent is left on hand, and the same would apply to the neighboring states. Virginia seems to have had a large crop last year and more than the usual amount, perhaps 30 per cent, on hand, and North Carolina is similarly situated.

Southern Georgia and Florida still have an unusually large amount of honey left on hand, ranging from 30 to 50 per cent, according to the producer.

These southern states are the only ones, however, which have an excess of honey.

Louisiana honey is clearing up very well and there is perhaps not over 15 per cent on hand now, and the same applies to Texas, although there are a number of cars of the darker grades. Most of the white and light amber honey seems to be well cleared up in Texas.

In Ohio some of the large producers have a considerable quantity on hand, but the other central states, consisting of Indiana, Illinois, Michigan, Wisconsin, Iowa and Missouri, seem to be very well cleaned up, with not over 20 per cent total on hand, and our estimate would be nearer 10 per cent.

Minnesota is also well cleaned up and North Dakota has less than 10 per cent left on hand, most of the large shipments having moved earlier, only small quantities being retained for retail trade. South Dakota, perhaps, and Kansas have a larger quantity on hand than any of the plains states area, this being reported as high as 20 to 30 per cent. Oklahoma, New Mexico and Arizona are very well cleaned up, with not over 10 per cent and more likely 5 per cent left on hand.

One reporter in Nevada states he has some two thousand cases left on hand for which he is not able to get a satisfactory price. Otherwise the intermountain territory, North and South seems to be very well cleaned up, there being perhaps a little more on hand in Utah and Wyoming than in other states, and perhaps the least amount in Montana. The entire area should not have over 10 per cent left on hand, and most of this is in the hands of the different marketing associations.

Oregon has a minimum amount left on hand, with perhaps 15 per cent left on hand in Washington.

California had a very short crop and the amount left on hand is negligible.

When it comes to the Canadian provinces, perhaps there is a less amount left for the carryover than has been the case for a number of years. This is due probably partly to the short crop last year and also the fact that prices had been reduced over a year ago, especially in the western provinces.

### HONEY DEMAND

As is usually the case at this time of year, the demand has slumped off considerably from the earlier demand. This, however, is nothing unusual for the post-holiday season, and one would ordinarily look for a slight advance in honey sales as the first of February is reached.

In a local way there has not been in any section any rapid increase in demand for honey during January, and all we can say is that the demand at the time this is written is from low to fair, with a few exceptions being good.

### ARE BEEKEEPERS ENCOURAGED?

In the Central West the honey crop has not been sufficient to encourage beekeepers to any great extent. We believe that, outside of a few of the smaller producers who are encouraged with their first efforts and want to increase, there is very little encouragement on the part of beekeepers, because of the fact that the markets have been so uncertain during the past three or four years.

On the other hand, however, we believe that it is a natural failing of the beekeeping fraternity to be easily encouraged and to look forward to the coming season with renewed hope. This seems to be a habit with beekeepers more than any other one branch of agriculture.

### INCREASE IN BEES

We asked in our questionnaire whether there would be a possible increase in bees in 1929 over 1928. There seems to be no general movement for any definite increase. Most beekeepers are desirous of maintaining their colonies and making up for any loss of bees during the winter. Outside of this, perhaps there will be no general increase, except that a number of the larger producers have become encouraged over the ready sale of their large crops of honey and will perhaps make fair increase during 1929. We do believe the situation is much better than it was a year ago in this regard, and that there will be a general tendency to increase to a greater extent than was true in the early season of 1928. However, we do not believe such increase is going to be sufficient to in any way make a great deal of difference in the general production.

In California there has been a great decrease in bees on account of the numerous short crops, and a good crop there should mean a relatively large increase, with an effort to get back to the old number of colonies.

So far, prospects seem to be better than average for a crop both in California and Texas, the only sections in which there can be any predictions.

All in all, the honey situation looks favorable, but there seems to be a general tendency to accept just a little lower price for large shipments of honey than was true during middle and late December.

Whether this is due to the desires of beekeepers to clear out everything before the early spring comes or whether it is really a shortening of demand on the part of the large buyers, is difficult to determine. We do know that one selling organization has practically cleared itself of honey and had to turn down requests for offers. On the other hand, there are still some lots begging buyers, it would seem, in the West, but a minimum of them compared with a year ago, or two years ago.

## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 7c per word, with no discounts. No classified advertisements accepted for less than ten words. Count each initial or number as one word.

Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

**Advertisements of used bee-keeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied by a certificate of inspection from an authorized inspector.**

## BEES AND QUEENS

**ITALIAN BEES AND QUEENS**—Two-pound package without queen, \$3.00. Untested queen, \$1.00; tested, \$1.50. Add price of queen wanted. Safe arrival after May 10. Birdie M. Hartle, 924 Pleasant Street, Reynoldsville, Pa.

**GERMAN BEE SHIPPER**—Italian queens and bees in packages. Write for price list. William Piefer, Gause, Texas.

**WRITE** for prices on package bees and queens. Jasper Knight, Hayneville, Ala.

**PACKAGE BEES**—Three-banded Italians, on frame of honey. One pound with queen, \$2.50; \$1.00 for each additional pound. Safe arrival. Inspection certificate. The Alexandria Apiaries, "In the Heart of Louisiana," 1415 Sixth Street, Alexandria, La.

**THAGARD'S ITALIAN QUEENS**—Bred from the very best imported stock. They are gentle, prolific and wonderful honey gatherers. Untested, \$1.00; 12, \$10.50; 100, \$70. V. R. Thagard Co., Greenville, Ala.

**FOR SALE**—Two-pound bees, young three-banded Italian queen, \$3.00. Health certificate with each shipment. Satisfaction guaranteed. Write for full particulars. J. L. Leath, Corinth, Miss.

**A FREE COMB** with each package, with special low prices on all orders booked during February. Thousands of packages and nuclei for sale. Very cheap prices. We should like to hear from several large buyers. Have a good offer. Safe delivery, satisfaction and no diseases guaranteed. High class reference furnished. Years of experience. Please let us quote you our prices. Rush. M. Voinche, Bunkie, La.

**PACKAGE** bees and queens, golden and three-banded Italians. Our standard package, consisting of select young queen, one frame of sealed brood built on full sheet of foundation, and three pounds of bees, \$4.50. Additional pound or frame to package, 75c. Untested queen, 85c; tested, \$1.50. Reductions on quantity orders. Safe arrival and satisfaction guaranteed. Inspector's certificate of health with each shipment. Orders booked without deposit. Moncla Bros., Moncla, La.

**ITALIAN QUEENS**—Read my advertisement in January issue. Allen Latham, Norwichtown, Conn.

**CHOICE** queens by return mail. Three-banded Italian queens, each, 80c; tested, \$1.00 each. Jul. Buegeler, Alice, Texas.

**OUR** circular tells why we have no drones in our package bees. No queen except one wanted, and very few old bees. An ideal package and at prices in line. Write for them. R. V. Stearns, Brady, Texas.

**GOLDEN** Italian queens, untested, \$1.00 each; twelve, \$9.00; six, \$5.00. Breeders, \$5.00 to \$10.00. Tested, \$2.50 each. Thirty years' a golden breeder, and they stand second to none. A. B. Brockwell, Barnetts, Va.

**PACKAGE BEES AND QUEENS**—Three-banded Italians. Send for free circular. We can save you money. Little River Apiaries, Gause, Texas. Box 83.

**CAUCASIANS**—If they are Quinn's, they are pure; they hold the world's record for both comb and extracted honey. Most gentle of all bees. Carniolans in their purity, Italians that are bred, not merely raised. Prices: Untested, \$1.50; select untested, \$2.00. Tested, \$2.50; select tested, \$3.00. Ten per cent off on lots of one dozen. Special prices on lots of 100, 500, 1999. Are you interested in a long tongue reach? If so, try Quinn's bees. Charles W. Quinn, C. E., the breeder of queens, Box 14, Englewood, Fla.

**EARLY** package bees and pure Italian queens. Many years' extensive shipping experience. Two- and three-pound packages \$1.00 per pound. Select young three-band Italian queen, \$1.00 each. We give an absolute guarantee of young bees, purely mated queens, full weight, no drones, safe arrival and prompt shipment. Health certificate with each shipment. Special prices on early large orders. Brazos Valley Apiaries, H. E. Graham, Prop., Cameron, Texas, Box 735.

**PACKAGE BEES**—April and May delivery. Write for prices with special offer. The Crowville Apiaries, Crowville, La.

**GOLDEN ITALIAN QUEENS**—Producing large beautiful bees. Solid yellow to tip. Package bees and nuclei. Circular free. Dr. White Bee Co., Sandia, Texas.

**GOLDEN** Italian queens and nuclei (or package bees) for 1929, the big, bright, hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, \$1.00 each; 6, \$5.00; 12, \$10.00; 100, \$75.00. Tested, \$2.00 each. Two-frame nuclei or two-pound package with queen, \$4.50 each; ten or more, \$4.00 each. Safe arrival guaranteed. Health certificate furnished. E. F. Day, Honoraville, Ala.

**QUEENS and Bees for 1929**. We can supply any style package. Not a single dissatisfied customer. Try our popular special, two frames of brood, four pounds bees and young queen, \$6.50; five for \$30.00. Prompt service and satisfaction. The Peerless Apiaries, Box 54, Marksfield, La.

**WILL EXCHANGE** package bees for good real estate, or anything valuable. Van's Honey Farms, Hebron, Ind.

**ITALIAN** queens and package bees for spring delivery. Get our prices and a free package. We sell bees according to the price of honey. We guarantee safe delivery and satisfaction. Health certificate with each shipment. The Mangham Apiaries Co., Mangham, La.

**HIGHEST** quality, prompt shipment, reasonable prices. Package bees and queens of the highest quality shipped at the time you want them, for a price that you can afford to pay. Safe arrival and satisfaction guaranteed. Health certificate with each shipment. Write for description and price list, also prices on large quantities. J. M. Cutts & Sons, R. I., Montgomery, Ala.

**CONSERVATIVE** booking and efficient service in package Italian bees. Two-pound package with queen, \$3.50. Other packages priced accordingly. H. J. Starbury, State Normal, Natchitoches, La.

**PETERMAN'S** select Italian queens and package bees. Queens: 1, \$1.00; 6, \$5.50; 12, \$10.00; 25, \$20.00; 50 or 100, 75c each. Package bees with queens, 2-lb.: 1, \$3.00; 6, \$13.75; 10, \$25.50; 50, \$125.00; 3-lb.: 1, \$4.00; 5, \$18.75; 10, \$34.50; 50, \$165.00. H. Peterman, Lathrop, Calif.

**MR. BEEKEEPER**—Before placing your order for bees, write me and get my prices. I have had nearly forty years' experience as beekeeper and I believe I can give you as good service as anyone else. Everything I send out absolutely guaranteed; all losses, when accompanied by a bad order receipt from express agent, made good at once. Write and get my prices before placing your order elsewhere.

O. P. Hendrix, West Point, Miss.

**BEES AND QUEENS**—Golden and three-banded Italians, also Carniolans, bred in yards four or five miles apart. Satisfaction guaranteed. I began advertising bees and queens in old American Bee Journal thirty-seven years ago. Write for price list. G. B. Bankston, Buffalo, Texas, P. O. 65.

**PACKAGE BEES**—Gentle, hardy northern Van's Honey Farms, Hebron, Indiana.

**FOR** packages and nuclei, early delivery. Write Elder Curd Walker, proprietor of the Vidalia Apiaries, Vidalia, Ga.

**PACKAGE BEES**—Gentle, hardy northern Van's Honey Farms, Hebron, Indiana.

**LEATHER COLORED ITALIAN QUEENS**—\$2.00; after June 1, \$1.00. Tested, \$2.00.

A. W. Yates, 15 Chapman St. Hartford, Conn.

**HIGHEST** grade Italian queens—Tested, \$1.50; untested, 75 cents. Package bees, one pound, \$1.50; two pounds, \$2.50; three pounds, \$3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed.

T. L. Davis, Buffalo, Leon Co., Texas.

**THRIFTY** Caucasian queens from daughters of imported mothers. After April 15: One, \$1.50; twelve, \$14.00. Safe arrival. Tillery Bros., Greenville, Ala., R. 6, U. S. A.

## FOR SALE

**180 COLONIES** disease free Italians. Good wholesale business. House and city lots. For sale in part or whole. Write for full detailed information. Sherman Whitney, Payullup, Wash.

**60-LB. CANS**—Bargain. Will sell first comers used good 60-lb. cans, cased, at special price 25c per case two cans, for prompt shipment, as higher price later on and pays to take now. Arthur H. Hoffman, Inc., Richmond Hill, N. Y.

**FOR SALE OR TRADE**—95 acres improved, three miles Emporia. Will take one-half value in bees and supplies. Edwin Collins, Emporia, Kansas.

**FOR SALE**—100 colonies bees, ten-frame equipment; guaranteed free of disease. Chester Keister, Orangeville, Ill.

**FOR SALE**—800 Modified Dadant shallow extracting frames and 15 pounds wired foundation for same, at 25 per cent discount off catalog price if purchased in one quantity. W. C. Long, Millville, Pa.

**FOR SALE**—House and lot; 160 colonies of bees in good condition; no disease here. Good town, good climate. \$1,000 will handle. Full details on request. A bargain. A. J. Kolt, Ennis, Texas.

**NUCLEUS FOR SALE**—Bees on combs stand transportation better; easily transferred to hive and build up to colonies quickly. Package buyers will not find better bargains. Our quality and service have no equal. Write us for prices B-4-U buy. Crenshaw County Apiaries, Rutledge, Ala.

**THIRTY** colonies in standard ten-frame hives, guaranteed free from disease. These bees have plenty of stores. Also 100 comb honey supers, in good condition.

G. L. Hodson, Converse, Ind.

**FOR SALE**—100 colonies of bees with complete equipment, eight-frame hives; located in sweet clover district of western Minnesota. For details, write L. D. Leonard, 10 Parkway Drive, Pelham, N. Y.

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**HONEY FOR SALE**—Michigan clover, extracted. Write for prices. W. S. Wiggins, Muir, Mich.

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**WILL EXCHANGE** new radio for honey or bee supplies. Ekstam Hardware, La Grange, Iowa.

**WINKLER'S** clover honey at 10c pound in new 60-pound cans. Winkler Honey Co., Joliet, Ill.

**HONEY WANTED**—Small or large lots. Send samples of grades, stating quantities, and price wanted. Also buy white comb. Arthur H. Hoffman, Inc., Richmond Hill, N. Y.

**FOR SALE**—Clover honey. Lewis Klaty, Carsonville, Mich.

**EXTRACTED** honey in 10-pound pails. Clover or fall. Priced to sell. Mays Ranch, Meredosia, Ill.

**WANTED**—Clear, water white or fancy white honey in 10-20 case lot. State price. Address "H. B." American Bee Journal.

PURE clover honey and pure autumn honey in pails and 60-pound cans. Descriptive price list free. F. A. Snell, Milledgeville, Ill.

**FOR YOUR APPROVAL**—Spanish needle, goldenrod, and heartsease honey. Well ripened, excellent aroma, and highly flavored. Can't be surpassed for pancakes and hot biscuits. Five-pound pail, \$1.00, postpaid. Quantity rates.

Ambraw Apiary, Landes, Ill.

**CHOICE** clover extracted honey, put up in 60-pound new containers. Write for quotations. M. Larson & Sons, Box 144, Gardner, Ill.

**FOR SALE**—6900 lbs. sweet clover honey in new 60-lb. cans at 8c. Sample free. M. W. Thompson, Toronto, S. D.

**HONEY FOR SALE**—Best quality, lowest prices. D. Steengrafe, 116 Broad Street, New York.

**FOR SALE**—Extracted honey in 60-pound cans. Henry Hettel, Marine, Ill.

**STURDEVANT'S CLOVER HONEY** — St. Paul, Neb. Any quantity.

**CLOVER** and buckwheat blend at 7½c pound. One-pound sample 25c. F. W. Summerfield, Grand Rapids, Ohio.

**WANTED**—Honey in trade for chicks; 10c pound in pails. Ames Hatchery, Deerfield, Wisconsin.

**HONEY FOR SALE**—Any kind, any quantity. The John G. Paton Co., 217 Broadway, New York.

**HONEY FOR EVERY PURPOSE**—We have it in any amount; light amber and white clover, basswood, sweet clover, buckwheat. Write us what you need and ask for prices. A. I. Root Company of Chicago, 224-230 West Huron Street, Chicago, Illinois.

**FOR SALE**—Light amber honey in 60-lb. cans; clover and buckwheat mixed. J. F. Moore, Tiffin, Ohio.

**WANTED**—White clover extracted honey. Send sample and your lowest price. A. L. Haenseroth, 4161 Lincoln Ave., Chicago, Ill.

**HONEY FOR SALE**—All grades, any quantity. H. & S. Honey and Wax Company, Inc., 265 Greenwich St., New York City.

**NEW CROP** shallow frame comb honey, also section honey; nice white stock, securely packed, available for shipment now. Colorado Honey Prod. Ass'n, Denver, Colo.

**FOR SALE**—Fancy, extracted, white clover honey in new 60-pound cans. None better on the market. Ten cents for two cans or less; nine and one-half cents for more than two cans, f. o. b. here. Also amber honey. Quality guaranteed. Sample 25c. E. J. Baxter, Nauvoo, Ill.

**HONEY FOR SALE**—White and amber honey in 60-lb., 10-lb. and 5-lb. tins. Write for prices. Dadant & Sons, Hamilton, Illinois.

**FANCY** white clover extracted honey, any sizes. Prices and samples on request. Kalona Honey Company, Kalona, Iowa.

**SHALLOW** frame white comb honey and white extracted honey. The Colorado Honey Prod. Ass'n, Denver, Colo.

**HONEY** (comb and extracted), pure maple syrup, maple sugar and sorghum molasses. Special price to quantity buyers. C. J. Morrison, 1235 Lincoln Way West, South Bend, Indiana.

**FOR SALE**—Northern white, extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

**FOR SALE**—Our own crop white clover and amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request. Dadant & Sons, Hamilton, Illinois.

**FOR SALE**—Buckwheat comb and extracted. Write H. G. Quirin, Bellevue, Ohio.

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**FREE**—One gallon white paint with \$20 order for Root bee supplies at regular catalog price. February only; cash with order. Mail coupon today. A. V. Small, Augusta, Kansas.

**LEAHY MFG. CO. BEE SUPPLIES**—Big discount on early orders. Send 50c for book, "How to Manage Bees." Catalog free. J. W. Rouse, Mexico, Mo.

**FOR SALE**—125 pounds Dadant's medium brood foundation, size 5x16-¾. Price 60c per pound. C. H. Root, Red Bank, N. J.

**BEE SUPPLIES** at factory prices. Hoffman brood frames \$3.95 per hundred. Send for free price list today. Schmidt Bee Supply Co., 1420-22 Hager Ave., St. Paul, Minn.

**FOR SALE**—Foundation, bee brushes, comb honey cartons, feeders, nailed and painted bodies, bottoms, covers, and bodies, veils, sections, a big assortment of frames, excluders, comb and extracting supers, k. d., and many other items in good, usable condition. Reason for selling, items no longer listed in our catalog. Prices the lowest anywhere for the value. You can address G. R. Lewis Company, at Watertown, Wis., Albany, N. Y., Lynchburg, Va., Texarkana, Ark., or Sioux City, Iowa.

**ROBINSON'S** comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, Chau. Co., N. Y.

**SAGGED COMBS** are result of slackened wires caused by wires cutting soft wood of frames. Use metal eyelets. Per 1,000, 60c. Handy tool for inserting eyelets, 25c. Postage 3c per 1,000. Superior Honey Co., Ogden, Utah.

**SHIPPING CAGES**—Comb and combless. Sugar pine; machine made; in flat; no metal. Best and cheapest you can find. Sample 15 cents, prepaid. E. P. Stiles, P. O. Box 422, Houston, Texas.

**BEST QUALITY** bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly.

The Colorado Honey Producers' Ass'n, Denver, Colo.

"**BEEWARE**" and Dadant's Wired Foundation for the Northwest. Catalog prices. F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices.

B. F. Smith, Jr., Fromberg, Mont.

### MISCELLANEOUS

200 NAMES and addresses for one dollar, of prominent Kentucky farmers living in the bluegrass region, central part of state. G. L. Baggerman, Paris, Ky.

**FARM SEEDS FOR SALE**—All leading varieties of high grade seeds. Samples and prices free. F. A. Snell, Milledgeville, Carroll County, Illinois.

**HAVE** four New Zealand rabbits will trade for bees. Price \$12.00. Write Robert Hotelk, Rt. 4, Hillsboro, Wis.

**IMPROVE** conditions for bees; grow vitex along fence rows, lawns and waste places. Grows throughout the United States; continuous blooming from May to October; grows rapidly. Price \$1.50 for ounce seed. Smaller amounts proportionate price. Joe Stallsmith, Galena, Kansas.

**FIRE**—No more fires. New method of rendering wax. Capping melter; liquefies honey and bee feeder. Send for circular. George Pratt, Topeka, Kans., 2235 Penn Ave.

**GEORGE S. DEMUTH** is editor-in-chief of Gleanings in Bee Culture. Its field editor is E. R. Root. This means a most carefully edited, able bee journal. Subscription price, two years for \$1.00. Write for sample copy. Gleanings in Bee Culture, Medina, Ohio.

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**FOR SALE**—We are constantly accumulating bee supplies, slightly shopworn; odd sized, surplus, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it. Dadant & Sons, Hamilton, Illinois.

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**MAKE** queen introduction sure. One Safin cage by mail, 25c; 5 for \$1.00. Allen Latham, Norwichtown, Conn.

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**WANTED**—Experienced man and helper on large apiary. Permanent position. Can begin immediately. George Morrison Farm, Poughkeepsie, N. Y.

**WANTED**—Position with large beekeeper, by experienced single young man. Lawrence Robins, Mt. Sterling, Ill.

**WILL** give experience and fair pay to active young man for work in extensive, well equipped apiaries producing extracted honey. State age, height, weight, experience, nationality. Permanent employment with good pay to right man. Morley Pettit, Georgetown, Ont.

**EXPERIENCED** bee man wants bees on shares. Write O. J. Reid, McNary, Texas.

**WANTED**—A partner in my bee business. I have a good location. Write me for information. G. W. Barge, Union Center, Wis.

**WANTED**—One experienced beekeeper and one helper for 1929 season. Give age, weight, experience, and salary expected. W. J. Forehand & Sons, Fort Deposit, Ala.

**WANTED**—To buy some 10-frame empty hive bodies. Must be in good condition, free from disease and cheap. Martin Carmoe, Ruthven, Iowa.

**WANTED**—A young man who wishes to learn beekeeping, for 1929. R. W. Ensley, Aberdeen, Idaho.

**WANTED**—Shipments of old comb and caps for rendering. We pay the highest cash and trade prices charging but 5¢ a pound for wax rendering.

Fred W. Muth Co.  
204 Walnut St., Cincinnati Ohio.

### Honey Wins in 4-H Club

Honey came out on top this year among the junior farmers of Orange county, California, for the largest single item of profit in 4-H agricultural club projects was made by two boys with thirty-seven colonies of Italian bees.

After the reports had all been checked over by Assistant Farm Advisor Eric Eastman, who is director of club work, Earl Emde, of Yorba Linda, and Elmer Post, of Garden Grove, were way out ahead with a net profit of \$371.41 made on honey.

Their project records covered 240 days. Expenses, including their work, amounted to \$420.41. Gross income was \$791.82. Their nearest competitors carried on poultry brooding projects on which the profit was \$230.78. Bradshaw.

It will pay you to get our

## BEES and QUEENS

You get no drones, no queen but the one wanted, and young bees — at no advance in price. Our circular tells how.

**Write Us**

**R. V. STEARNS**

Brady, Texas

## YOUR QUEENS

TESTED, WINTERED, \$1.00 each while they last  
Untested, \$1.00 each, 10 for \$8.50, 100 for \$75.00

Ready April 1st.

PURE THREE BAND OF THE BEST

**D. W. HOWELL, Shellman, Georgia**

## LAND OPENING

A New Line under construction in Montana opens a million acres of good wheat and stock country. Send for New Line book.

Minnesota, North Dakota and Montana offer best opportunity in two decades to secure good improved farms from banks, insurance and mortgage companies at a fraction of their real value. Send for lists. Improved farms for rent.

Washington, Oregon and Idaho have exceptional opportunities in fruit and poultry raising and dairying with mild climate and excellent scenic surroundings.

Write for Free Book on state you prefer.

### Low Homeseekers Rates

**E. C. LEEDY**

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St. Paul, Minnesota

### BOOKING ORDERS

for high-grade three-banded Italian bees and queens. 2-lb. package with select untested queen, \$4.50; discount on quantity. Select untested, \$1.00, \$10.00 per dozen; select tested queen, \$1.50. Inspector's certificate with each.

**J. ALLEN, Catherine, Alabama**

### Meeting and Events

(Continued from page 89)

ducer, who has about one thousand colonies, will give a talk on "Overwintered Colonies vs. Package Bees."

Mr. Charles A. Reese, Columbus, Ohio, who has charge of the state bee inspection work, will give a report on the progress of inspection in this state.

Mr. Virgil N. Argo, extension specialist in beekeeping at the Ohio State University, will take charge of the open discussions each morning and will also take part in the beekeeping program.

Mr. W. E. Dunham, who has charge of the instructional work at Ohio State University, will take an active part in the program. His talks will touch on the causes of swarming and the fundamental principles involved in queen-rearing, along with a practical demonstration of the latter.

The beekeepers' banquet is always one of the most delightful parts of the program. This year it will be held at 6 o'clock on the evening of February 7, at the Ohio Union, a five-minute walk from the Administration building. "And dinna forget, folks, we will also ha'e wa'e us ag'in this year our auld Scotch friend, Mr. Thomas Graham, our 'Columbus Harry Lauder,' to stir our Scotch spirits once more."

W. E. Dunham,  
Ass't Sec'y and Treasurer,  
Ohio Beekeepers' Ass'n.

### Meeting of Apiary Inspectors

There will be an official meeting of the Chief Apiary Inspectors on February 8, 1929, as a part of the American Honey Producers' League meetings at Sioux City, Iowa. This includes all representatives north of Mexico. Ways and means of better inspection conditions are to be taken up and acted upon at this meeting. This should mean much to improve the conditions of production, as well as of marketing, in the beekeeping business. All beekeepers in the United States and Canada should urge that their state or provincial chief apiary inspector should be present to represent them in the action to be taken up at this meeting.

The certificate plan on railroad rates of one and one-half fares has been granted. R. L. Parker, Chairman, Section Apiary Inspection, Am. Honey Producers' League.

### Southern States Conference

The Southern States Conference and meeting of the Louisiana Beekeepers' Association is to be held at Louisiana State University on February 8 and 9. An interesting program is provided, with Governor

Parker and Commissioner Wilson among the speakers. Among the outsiders we notice James I. Hambleton and J. J. Wilder are to appear. Other speakers are W. E. Anderson, C. T. Dowell, W. E. Joor, W. B. Gehrels, W. G. Boles, G. Sadler and Dr. W. E. Gates. An inspectors' survey is arranged with inspectors from eight southern states in conference.

### Idaho Convention

Beekeepers of this state gathered for one of their most important sessions in the history of the Idaho association, aroused by the menace of embargoes against their honey.

Steps to curb certain diseases and production slumps were the main themes of the convention, which convened for two days, January 10 and 11, at Boise.

R. D. Bradshaw, of Wendell, state president, was in charge of the gathering. C. H. Stinson, secretary, of Twin Falls, was present, as were also Frank Beach, of Burley, chairman of the legislative committee, and other beemen, numbering more than a score.

The honey men brought out the fact that bees are much in demand in Wenatchee orchards, where owners of hives are paid for permitting them to be placed in the orchards during the blossoming season.

Over sixty apiary men heard A. W. B. Kjosness, manager of the Mountain States Honey Producers' Association, review the situation over the United States with regard to honey production in the past year.

Federal Government figures show, he said, that Idaho leads in honey production per colony.

### Colorado Honey Producers

The annual meeting of the Colorado Honey Producers' Association will be held at the Auditorium Hotel, Fifteenth and Stout streets, Denver, Colorado, March 4 and 5.

The Monday session will open at 10 a. m. and everybody interested in honey production is invited to be present. An attractive program will be provided and we will have addresses of well known experts on subjects of great interest to western producers.

Frank Rauchfuss, Secretary.

### Michigan Short Course

A one-week course in beekeeping will be offered by the Horticultural Department of Michigan State College, East Lansing, February 11-16. Special attention will be given to problems of fruit growers who are chiefly interested in the use of bees for pollenizers. Lectures, demonstrations and laboratory work will cover the fundamentals of beekeeping prac-

tice. All classes will be held in the Horticultural building.

#### Indiana Short Course

Prof. J. J. Davis has announced a short course in beekeeping at Purdue University, February 18-20. Prominent speakers from outside that state will assist local talent with the course. All interested will be welcome whether or not they are residents of Indiana. The complete program can be secured from the department of entomology, Purdue University, Lafayette, Indiana.

#### Wisconsin State Convention

One nice feature of the Wisconsin convention was a fine exhibit of honey and foods arranged on tables in the rotunda where all comers could see it. These materials were sold during the convention, to be removed on the last day.

Among the reports of committees, I note the report of the Educational Committee, Mrs. C. A. Wood, chairman. Mrs. Wood has done a remarkably fine work along educational lines during the past year, and it would be a fine thing if every state could have such a worker. She works with schools, clubs, young people's organizations, by addresses and written letters to educate the people to uses and advantages of honey as a food. The Wisconsin association is very fortunate in having such a woman to fill so important a position, for she is doing a lot of good for our industry.

Another high-light was an address by H. H. Root, of Medina, Ohio. Mr. Root informed us regarding the movement whereby great capital was organized to get behind the bottling, advertising and distribution of honey as they have done in the case of fruit, preserves, and kindred products. It looks as though the time was soon coming when the average beekeeper could turn his attention to production and have no worries regarding the sale of his crop. Those who will be organized to handle the crop will be ready to take his product at once and pay him a fair price. Heretofore, if a man wished to succeed with the bee and honey business he must be a pretty good honey salesman, or, in other words, train himself to two separate lines of effort.

The address by Mrs. S. C. Jenson, formerly Miss Fischer, was well received.

At the banquet held at the Simons Hotel in the evening, N. E. France read a very fine historical paper. Although not much older than the writer, Mr. France knows much more of the early history of beekeeping

## The Standard Churn Company of Wapakoneta, Ohio

Will have on the market and ready for distribution all sizes of  
**BEE SMOKERS AND UNCAPPING KNIVES**

We will also have ready

### CAPPINGS EXTRACTING BASKETS

Which will fit any size or make of Reversible Extractors. Also  
Baskets designed to fit only our "Back-Lot" type of Extractors.  
These goods will all be sold under our regular policy of

### Money Back Guarantee

We are the largest manufacturers of hand power Honey Extracting Machines in the United States. Bee supply dealers should arrange at once to carry our full line of Extractors and the above supplies.

*Write us for prices and catalogue*

## When You Buy Bees You Expect Your Money's Worth

### WE GIVE THAT PLUS

The best queens, the best bees, the largest packages, the best combs, and no drones, because our combs are all from sheets of foundation and it is needless for us to screen them out.

We guarantee your shipping date. (Write about this.)

No order too large and none too small

**MOULTRIE**

**J. G. PUETT & SONS**

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"Where satisfaction is a certainty"

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Our 1929 catalog now ready for distribution.

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We would like to hear from Beekeeper's Associations who are interested in buying their supplies at a great saving.

**A. H. RUSCH & SON CO.**

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## PACKAGE BEES AND QUEENS

PURE THREE-BANDED ITALIANS ONLY

We own and produce everything we ship. One thousand colonies from which to shake packages. Two thousand mating nuclei to furnish the young queens. Fifteen years' experience, and an untarnished record for fair dealings.

CAN WE SUPPLY YOUR NEEDS? If not, why not. Look up our standing at home and abroad. There's a reason for having to increase our capacity each year. The same high quality packages and queens, at prices made possible only through volume.

Our guarantee: All package bees to be at least 95 per cent pure Italians; queens 100 per cent pure, of our best stock, purely mated. Freedom from disease, safe arrival in good condition, and entire satisfaction from the standpoint of VALUE.

2-lb. Packages, with Select Untested Queens \$2.90 each  
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FREE, with each twenty-five packages, one extra package, same as order

Queens — Select Untested, \$1.00 each; \$11.00 per dozen; \$75.00 per hundred

**JENSEN'S APIARIES, Crawford, Miss.**

## PACKAGE BEES

Pure three-banded Italians with select young laying queen of our own production

Safe arrival and satisfaction guaranteed

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Inspection certificate and all papers necessary to deliver at destination without delay

1000 colonies and 1200 nuclei to draw from

Sixteen years' experience as extensive shippers

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Beekeepers in many lands have been pleased with this most important tool in Beekeeping. Your Bingham Smoker is offered for sale by numerous dealers.

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### Golden Queens and Banded Bees

FOR 1929

Untested queens	\$1.00 each
Tested queens	\$1.50 each
Bees	\$1.50 per lb.
Nucleus	\$1.50 per frame

Bees inspected; free from disease

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### MACK'S PRICES

On Queens and Package Bees for 1929 will interest you. Write for them. Every sale a satisfied customer.

Herman McConnell  
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### HIGH GRADE ITALIAN BEES

Priced right, packed right, shipped right, delivered right, anywhere, any time after April 15, will serve you right after being received. Write us now and let us quote you prices on any kind package you desire.

### COTTON BELT APIARIES

PARIS, TEXAS, R. R. 2

## Book Your Orders Now

### For Package Bees and Italian Queens

#### Two and Three Pound Packages

Write for prices. No order too small or too large.

Nineteen years in business. Safe arrival guaranteed. Delivery begins in March.

R. E. LA BARRE  
Box 1042 Tulare, California



A. B. PINARD,  
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### THE PINARD NAILLESS QUEEN BEE Shipping Cage

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Send for circular or samples

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### SPECIAL PRICE ON PACKAGE BEES

Reduction of overhead expenses makes possible a special price on package bees, and if you are in the market for spring packages, our prices will save you money.

Write today — don't delay

### URIAH APIARIES

Box A Uriah, Alabama

### BRIGHT THREE BANDED ITALIAN QUEENS

Package Bees—One two-pound package with queen, \$3.75; five, \$3.70; ten, \$3.60; twenty-five, \$3.50; fifty, \$3.40. Three-pound size \$1.00 more each.

Queens—One, \$1.00; six, \$5.50; twelve, \$10.00; fifty, \$37.50; one hundred, \$70.00. Twenty per cent with order. Begin shipping April 15. We guarantee safe arrival, satisfaction.

TAYLOR APIARIES, LUVERNE, ALA.

When Writing Advertisers Men-  
tion The American Bee Journal

in Wisconsin. I did not become interested in bees until I was 24 years of age, while Mr. France began in early boyhood, if I am correct. He knew Adam Grimm personally. He said that Adam Grimm went to Italy to bring back some queens. He started with one hundred, but when he reached New York they were all dead. Later on he tried again and reached New York with sixty live queens, twenty of which he sold to eastern beekeepers at \$25.00 each. The others he got home, and introduced them without the loss of one by making new colonies.

A little later Mr. France, then a boy of about 18, went to Mr. Grimm's place and purchased one Italian queen for \$18.00. At that time good honey in the comb or extracted form could be sold for 25 to 30 cents a pound. Adam Grimm got \$10,000 for a single honey crop and started a bank in Jefferson, Wisconsin, and soon after died.

The evening meeting following the banquet was not a serious one and much time was taken up with stories and jokes. Mrs. Wood had brought along an oldtime fiddler, who treated us to some very pleasing violin music.

The next forenoon the meeting was held in Agricultural Hall on the university grounds. The outstanding feature at this meeting was the address by H. L. Russell, dean of the College of Agriculture. Mr. Russell told us of his travels to Denmark and to New Zealand in the interests of the dairy industry. He stated that it is quite plain that beekeeping is just on the edge of passing into that state of affairs where corporate interests and cooperation will lift the burden of standardization and distribution from the shoulders of the beekeepers. Mr. Russell's address confirmed and enlarged upon what Mr. Root had brought out in his former talk, yet there had been no previous knowledge of what either was to say.

Prof. H. F. Wilson described the Miller Memorial Library, for which a new and adequate building is being erected. He said it was the most complete library of its kind in the world. Inasmuch as Dr. Miller did not belong to Wisconsin, but to the whole beekeeping world, this should cause no jealous thoughts that we have the care of it.

Harry Lathrop.

### Tri-County Meet

The Tri-County Ohio Beekeepers' Association held their last meeting at the home of Fred Leininger at Delphos, when the following officers were elected: President, F. T. Allemer; vice-president, George Morrison; secretary-treasurer, L. E. Foley.

Vol.

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